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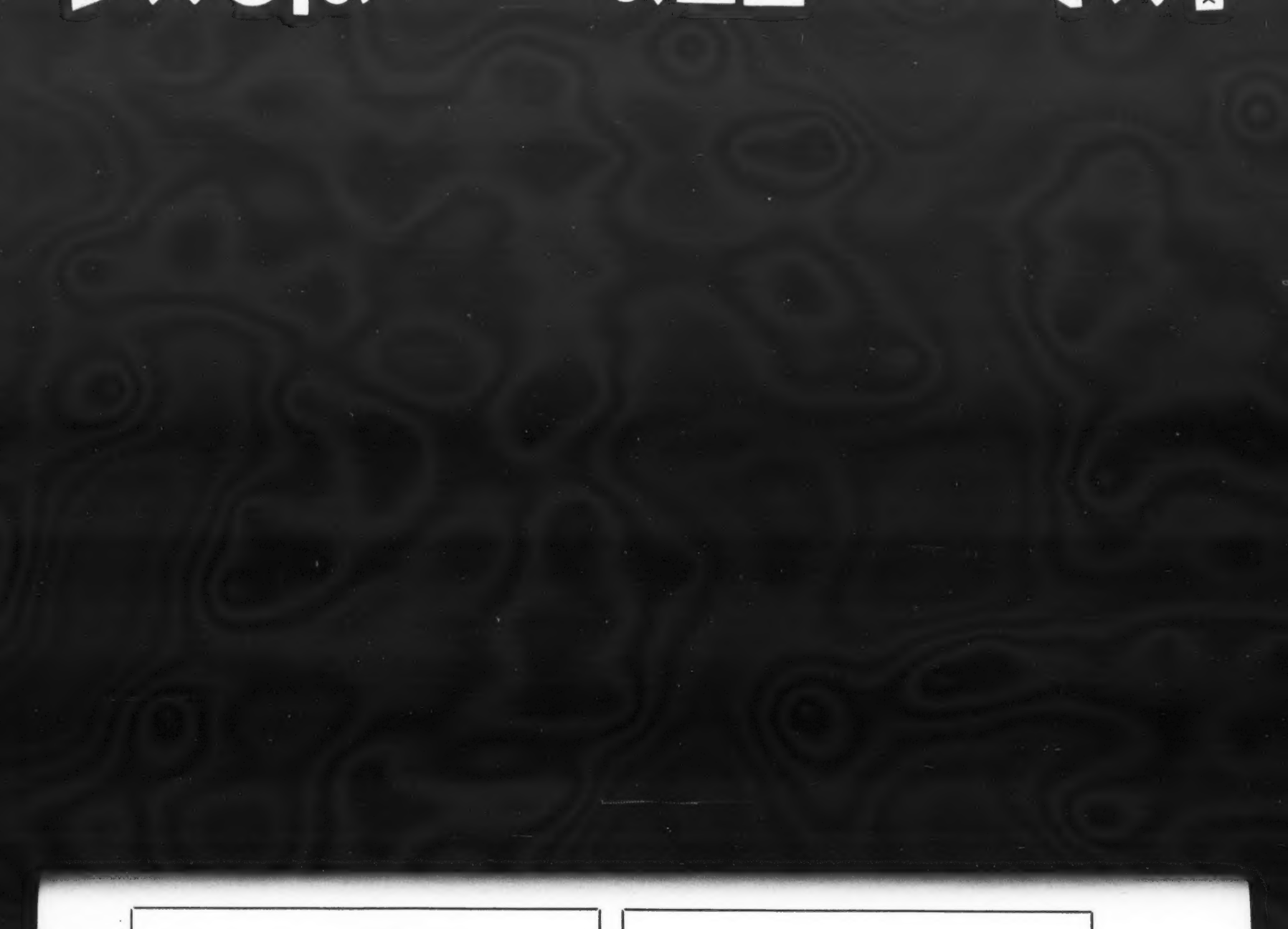

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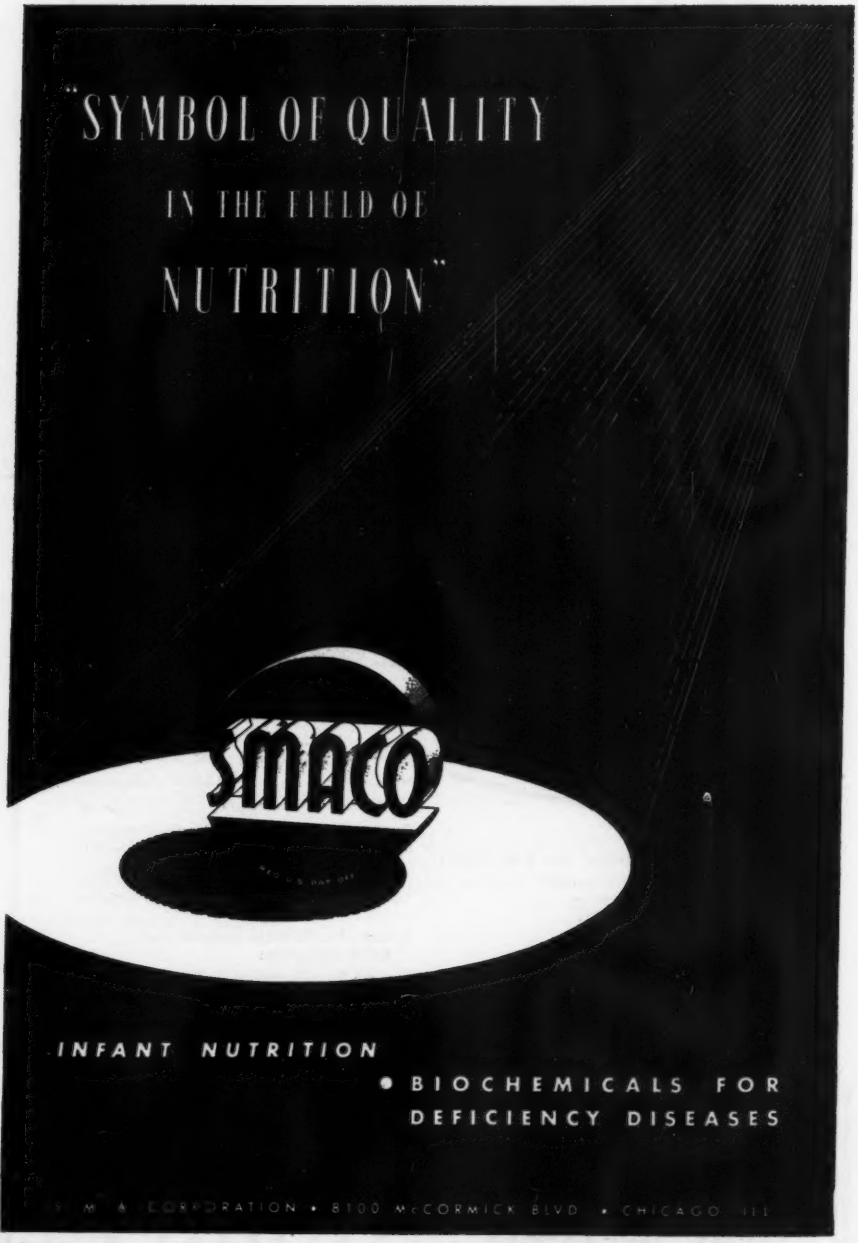
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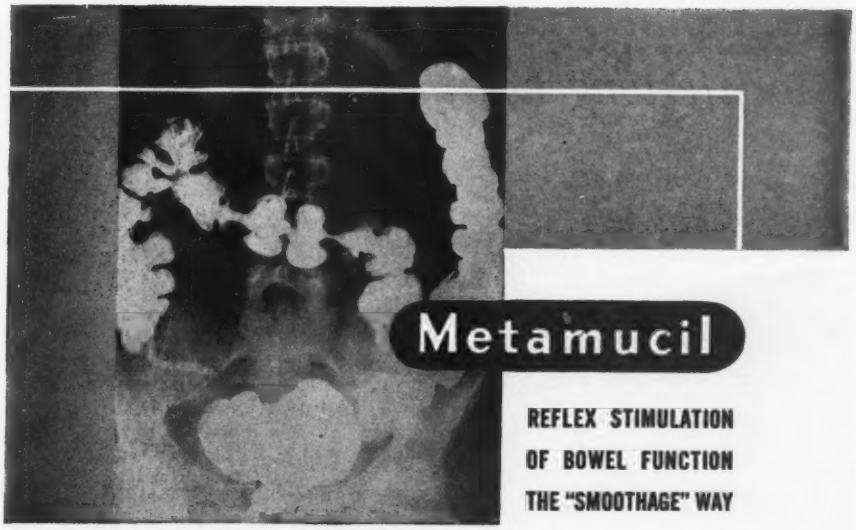

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[1]Federal Register: 6: 5921 (Nov. 22) 1941.

[2]Report on the Physiological Bases of Nutrition: League of Nations: 2:17 (1936).

[3]STRAUSS, M. B.: J. Clin. Investigation 12: 345 (Mar.) 1933.

[4]Holt's Diseases of Infancy and Childhood. Appleton-Century Co., New York, 11th edition; p. 618.

[5]WITTS, L. J.: Proc. Roy. Soc. Med. 24: 543 (Jan. 13) 1931.

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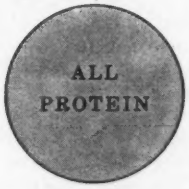

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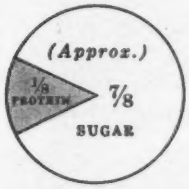

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1. Gallup, G.; American Institute of Public Opinion Survey, February, 1943.

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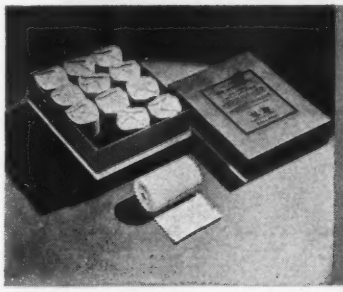

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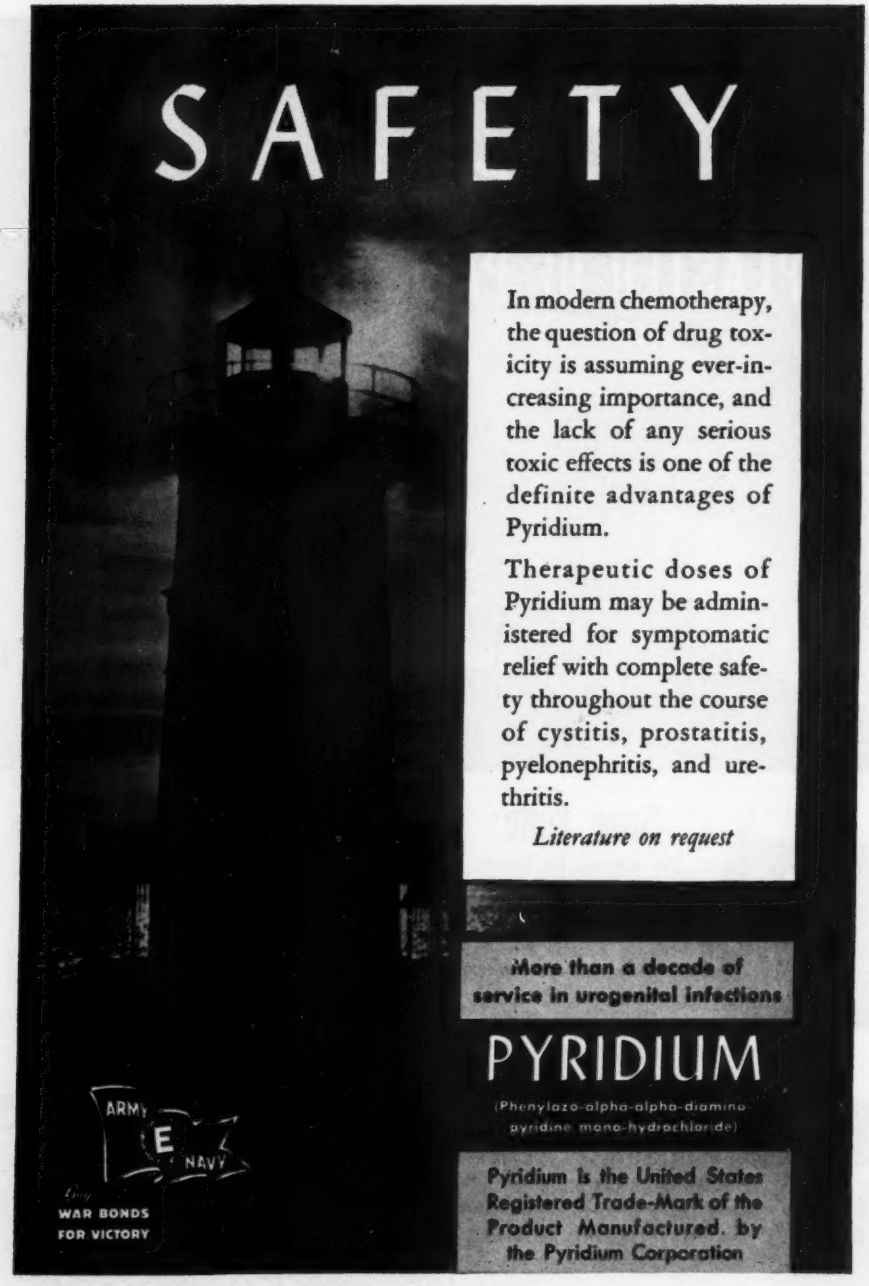
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To the hospital buyer they mean economy in the maintenance of blade consumption at a practical minimum . . . closer budget control . . . a satisfied surgical staff.

Your dealer can supply you

BARD-PARKER COMPANY, INC.
DANBURY CONNECTICUT

A Protective Safeguard in Salicylate Therapy . . .

NATURAL SALICYLATE WITH ALKALIS

To secure the desired therapeutic response from salicylate medication, it often becomes necessary to prescribe large doses at frequent intervals.

As a safeguard against possible gastric irritation, which might seriously interfere with the continuity of your regimen, prescribe the well-tolerated

Elixir

ALYSINE

Brand of Natural Salicylate and Alkaline Salts

The salicylates used in Alysine are guaranteed *natural*, combined in 1:2 ratio with selected alkaline salts.

ADJUNCTIVE TO THE SULFONAMIDES—When used adjunctively to the "sulfa" drugs in influenza or la grippe, Alysine provides a desirable alkaline factor as well as helping to relieve the muscular aches and pains which accompany most cases.

Elixir Alysine is supplied in 4-oz., pint and gallon bottles. Also available in Powder and Effervescent Tablets.

Write for literature and sample of Elixir Alysine.

Founded 1828

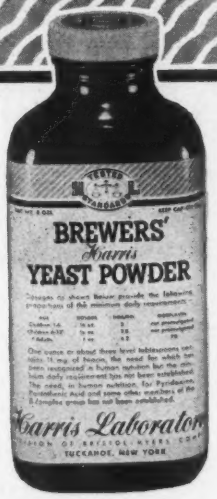
MERRELL

100th Year

Trade Mark "Alysine" Reg. U. S. Pat. Off.

THE WM. S. MERRELL COMPANY CINCINNATI, U. S. A.

HARRIS VITAMINS ARE NEVER PROMOTED TO THE PUBLIC



Pellagra Therapy

REQUIRES B-COMPLEX

IT has been said[1] that pellagra usually is the result of a multiple vitamin deficiency and can be cured by the administration of all members of the vitamin B-complex. Experience has shown that brewers' yeast, which contains the B-complex in natural combination, is successful in the treatment of pellagra secondary to chronic alcoholic addiction or organic disease, pellagra sine pellagra, and endemic pellagra. Many patients show rapid improvement, clearing of symptoms and often complete recovery.

BREWERS' YEAST POWDER (Harris) contains all fractions of the B-complex from a natural source and natural fractions have been shown to be more effective than a combination of known complex factors in synthetic form.

HARRIS VITAMIN PREPARATIONS NOW EMBRACE:

Halamult • Halapan
Halaplex • Haladee • Lamilets
Nicotinic Acid • Vitamin C
Vitamin B_1 • Vitamin B_2

[1] H. R. Rosenberg: Chemistry & Physiology of the Vitamins, Interscience Publishers, 1942.

TESTED STANDARDS

Harris Laboratories
(Division of Bristol-Myers Company)
Tuckahoe, N. Y.

PRODUCERS OF VITAMINS FOR MEDICAL USE SINCE 1919

HARRIS LABORATORIES Dept. S
Tuckahoe, N. Y

I would like a trial package of Yeast Vitamine Tablets and information on new HARRIS Vitamin Preparations.

Name_____

Address_____

City_____ State_____

Something can be done

Under adequate ERTRON therapy, the arthritic patient can be rendered free from pain; mobility can be increased considerably; and the systemic evidence of metabolic disturbance can be controlled.

In the hundreds of cases studied intensively in leading arthritis clinics, the improvement in *Ertronized* patients followed quite closely a definite pattern:

ERTRON Parenteral
For the physician who wishes to reinforce the routine oral administration of ERTRON by parenteral injections, ERTRON Parenteral is now available in packages of six 1 cc. ampules. Each ampule contains 500,000 U.S.P. Units of electrically activated, vaporized ergosterol (Whittier Process).

First, a generally improved sense of well-being—increase in appetite and strength; better mental outlook. In undernourished patients, a gain in weight usually follows. This earliest evidence of favorable response indicates the systemic action of ERTRON. Passive mobility is next improved and, lastly, pain is gradually reduced, allowing greater active mobility.

ne for the Arthritic . . . .

Ertronize the Arthritic Patient

The mass of accumulated evidence demonstrating the value and safety of *Ertronization* therapy, based on years of experience with this proved form of treatment, justifies its use as the treatment of choice as soon as the diagnosis of chronic arthritis is confirmed.

ERTRON—the only high potency, electrically activated, vaporized ergosterol (Whittier Process), is made only in the distinctive two-color gelatin capsule.

Supplied in bottles of 100 and 50 capsules.

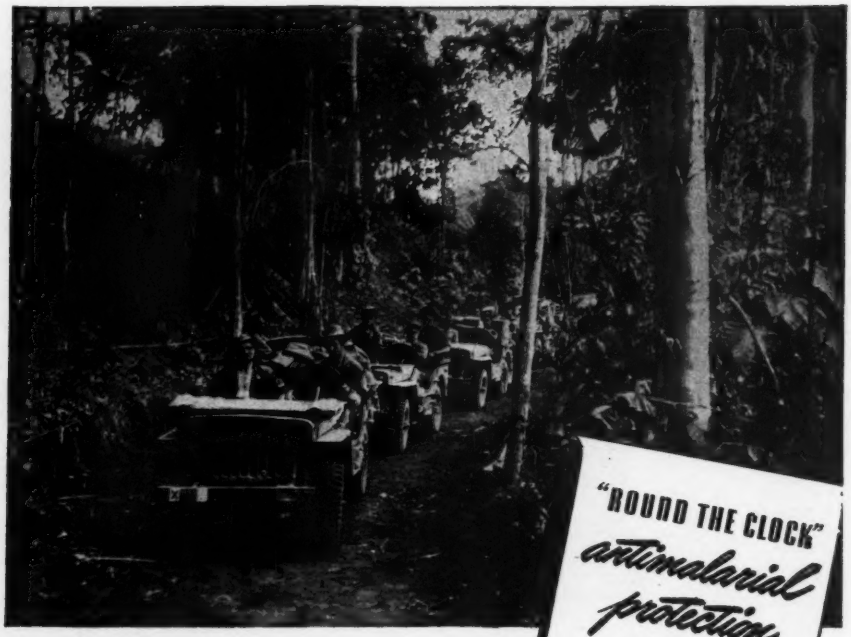
ALSO NEW 500 CAPSULE BOTTLE

ERTRON is promoted only through the medical profession.

E R T R O N*

*Reg. U. S. Pat. Off.

NUTRITION RESEARCH LABORATORIES • CHICAGO



"ROUND THE CLOCK" *antimalarial protection* FOR OUR ARMED FORCES

The competent medical officers responsible for the health of our armed forces have seen to it that every soldier, sailor and marine will have the fullest protection against malaria that modern methods can afford.

Protection includes prophylaxis and therapy with synthetic substitutes for quinine. Round the clock production, attuned to wartime needs, is making available Atabrine dihydrochloride in amounts heretofore believed beyond reach.

The production of Atabrine dihydrochloride is greatly counteracting the pernicious activity of anophelines!

ATABRINE

Trademark Reg. U. S. Pat. Off. & Canada

DIHYDROCHLORIDE

Brand of

QUINACRINE HYDROCHLORIDE

ARMY E NAVY

This cherished symbol of distinguished service to our Country waves from the Winthrop flagstaff.

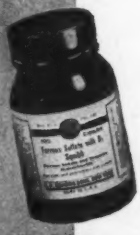
WINTHROP CHEMICAL COMPANY, INC.

Pharmaceuticals of merit for the physician

NEW YORK, N. Y.
WINDSOR, ONT.

In Treating Secondary Anemia

MAKE THE THERAPY
SUIT THE NEED



THE SELECTION of a hematinic for the treatment of secondary anemia must take into account the need for iron—and frequently for vitamins and other factors contained in liver. Whether the patient needs all these substances, or only some of them, the following Squibb hematinics will prove useful.

HEBULON* CAPSULES—because of their content of iron, liver extract and vitamin B Complex, provide factors often simultaneously required by the patient with secondary anemia. Each easy-to-swallow gelatin capsule contains 2 grains exsiccated ferrous sulfate (approx. 40 mg. iron); 50 U. S. P. units of Vitamin B_1; and the B Complex Factors present in the liver extract (derived from 16 Gm. fresh liver). Supplied in bottles of 100, 500 and 1000 capsules.

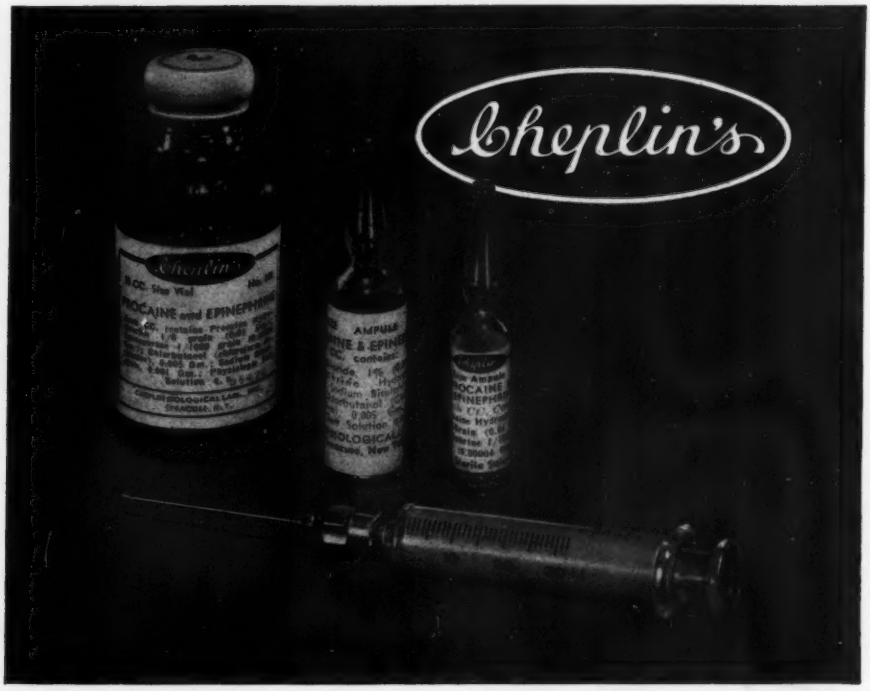
TABLETS FERROUS SULFATE EXSICCATED SQUIBB—where iron alone is indicated. Contain iron in ferrous form—shown in numerous clinical studies to be more effective in smaller dosage than other forms of iron and to have fewer undesirable side-effects. Supplied in 3-grain enteric-coated tablets in bottles of 100 and 1000. Three grains is the U. S. P. dose for exsiccated ferrous sulfate as compared to 5 grains of the hydrated salt. Squibb has always used the exsiccated form.

CAPSULES FERROUS SULFATE WITH B_1 SQUIBB—for prevention and treatment of secondary anemia—in patients with anorexia or other manifestation of Vitamin B_1 deficiency. Each capsule contains 3 grains of ferrous sulfate exsiccated and 1 mg. of thiamine hydrochloride (333 U. S. P. units of Vitamin B_1). Supplied in bottles of 100 and 1000 capsules.

* "Hebulon" (Registered in U. S. Pat. Off.) is a trade-mark of E. R. Squibb & Sons.

For literature address the Professional Service Dept., 745 Fifth Avenue, New York 22, N. Y.

E·R·SQUIBB & SONS



Procaine Hydrochloride and Epinephrine

The combination of the prompt and powerful local anesthetic action of procaine hydrochloride with epinephrine is very effective. With CHEPLIN'S PROCAINE HYDROCHLORIDE and EPINEPHRINE the period of anesthesia is prolonged through retarded absorption of the anesthetic. It also causes blanching of the operative area, thus giving the surgeon a clear field.

Literature on request.

1% PROCAINE HYDROCHLORIDE and 1:25,000 EPINEPHRINE
is supplied for subcutaneous and intramuscular use in ampules and vials.

"ACCEPTED STANDARDS AT AN ACCEPTABLE COST"

CHEPLIN BIOLOGICAL LABORATORIES, INC.
(Division of Bristol-Myers)
Syracuse, New York

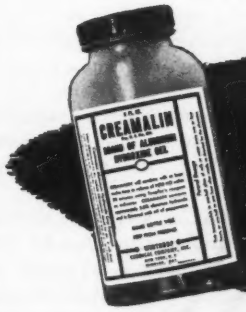
Rapid and pronounced reduction of stomach acidity

Creamalin promptly reduces stomach acidity. Moreover, the antacid effect is sustained.

With Creamalin there is no compensatory reaction by the gastric mucosa and no oversecretion of hydrochloric acid. Furthermore, there is no risk of producing alkalosis.

When employed with an ulcer regimen, Creamalin often induces unusually rapid healing of peptic ulcer.

Supplied in 8 oz., 12 oz. and 1 pint bottles



CREAMALIN

Reg. U. S. Pat. Off.

ALUMINUM HYDROXIDE GEL

Non-Alkaline Antacid Therapy

WINTHROP CHEMICAL COMPANY, INC.

Pharmaceuticals of merit for the physician

NEW YORK, N. Y. WINDSOR, ONT.

SHARP & DOHME

ANNOUNCES

SULFAMERAZINE

Sulfamerazine, or 2-sulfanilamido-4-methylpyrimidine, is a new compound which will simplify dosage and lower costs in sulfonamide therapy.

Sulfamerazine was developed at the Medical-Research Laboratories of Sharp & Dohme and has been subjected to intensive pharmacologic and clinical examinations during the past few years. Supplies of this new drug will soon be generally available.

Rapidly absorbed . . . slowly excreted

In comparison with sulfadiazine, sulfamerazine is more rapidly and completely absorbed from the gastrointestinal tract and more slowly eliminated by the kidneys. Thus smaller and less frequent doses of sulfamerazine are necessary to produce and maintain therapeutic concentrations of the drug in the blood and tissues.

Moreover, free and acetylated sulfamerazine are more soluble in neutral or acid urine than are the corresponding forms of sulfadiazine. This fact, together with sulfamerazine's slow rate of excretion, diminishes the possibility of drug concretions in the urinary tract.

Small, infrequent doses

The less frequently required doses of sulfamerazine reduce sulfonamide therapy to its simplest, most economical terms. In diseases in which four to six doses of sulfadiazine (or other sulfonamide) are given daily, the same therapeutic results may be obtained with a minimum of inconvenience to the patient and at proportionately lower cost by only two to three doses of sulfamerazine.

•

ADMINISTRATION...Sulfamerazine tablets are administered by mouth in the treatment of infections caused by pneumococci, streptococci, meningococci and gonococci. Solutions of sodium sulfamerazine can be given intravenously.

Moreover, the smaller dose and longer retention of sulfamerazine have suggested the new drug's value as a prophylactic against certain infections. Sulfamerazine is no more toxic than sulfadiazine and appears to be safer, especially with regard to the possibility of urinary complications.

Supplied in 0.5 Gm. and 0.25 Gm. tablets. Sodium Sulfamerazine Powder (for intravenous solutions) is available in vials containing 5 Gm. Detailed information concerning sulfamerazine may be obtained upon request from the Medical-Research Division.

Sharp & Dohme

PHILADELPHIA (1) PA.

100%

NATURAL-SOURCE VITAMINS A AND D OF

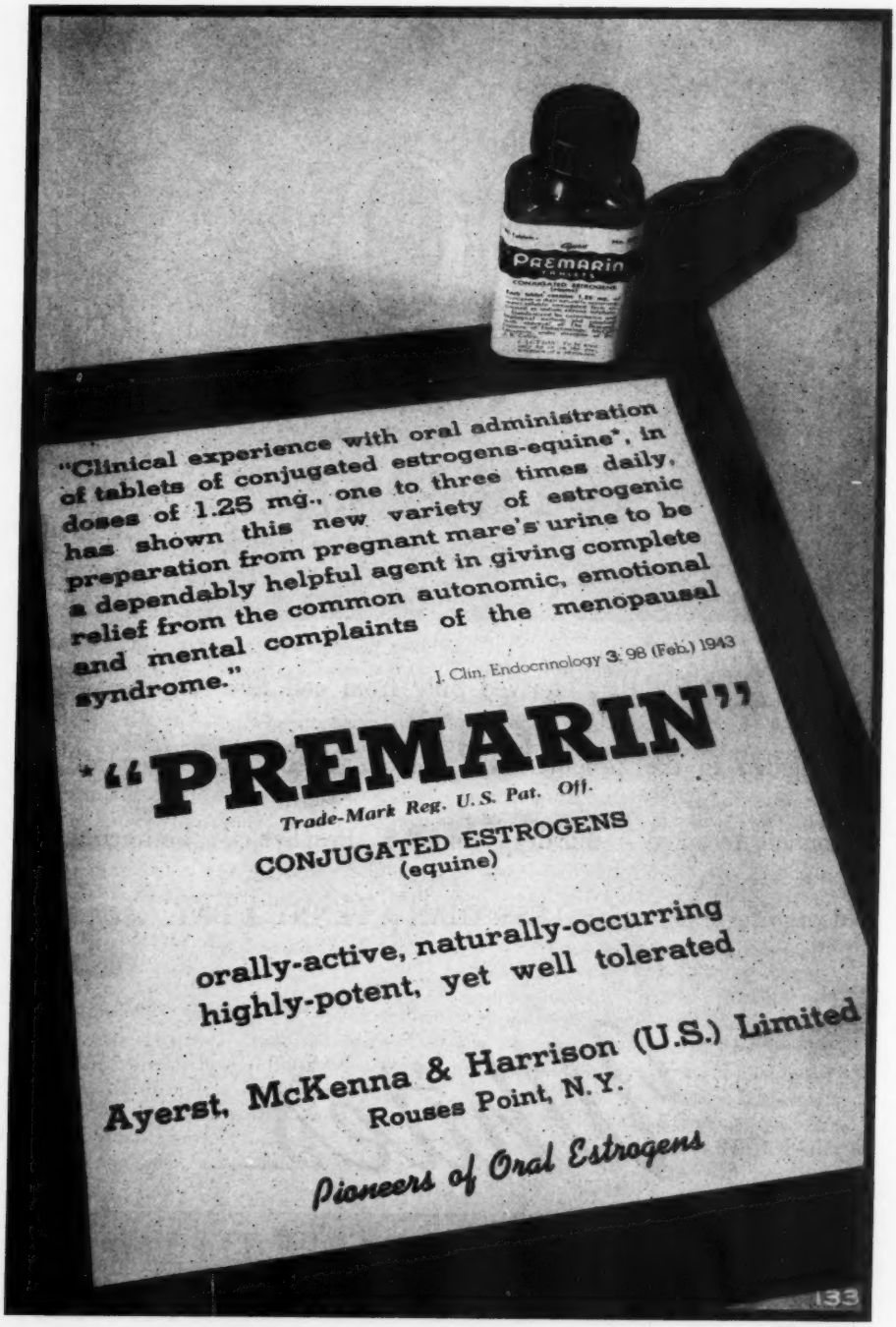
COD LIVER OIL

. . . . derived only from cod liver oil itself—presented in the proportions found in U. S. P. cod liver oil. Council-Accepted—ethically promoted. Prophylactic antirachitic dosage for infants costs LESS THAN A PENNY A DAY.

White's

COD LIVER OIL CONCENTRATE

LIQUID TABLETS CAPSULES


PREMARIN
"Clinical experience with oral administration of tablets of conjugated estrogens-equine*, in doses of 1.25 mg., one to three times daily, has shown this new variety of estrogenic preparation from pregnant mare's urine to be a dependably helpful agent in giving complete relief from the common autonomic, emotional and mental complaints of the menopausal syndrome."
J. Clin. Endocrinology 3: 98 (Feb.) 1943
*"PREMARIN"
Trade-Mark Reg. U. S. Pat. Off.
CONJUGATED ESTROGENS
(equine)
orally-active, naturally-occurring
highly-potent, yet well tolerated
Ayerst, McKenna & Harrison (U.S.) Limited
Rouses Point, N.Y.
Pioneers of Oral Estrogens
133

Non-Irritating Bulk

—non-digestible and non-absorptive of vitamins—makes this hydrophilic colloid a favored laxative in colitis

Mucilose

This highly purified hemicellulose is available in 4-oz. and 16-oz. bottles as Mucilose Flakes and Mucilose Granules.

Frederick Stearns & Company

Since 1855 . . . ESSENTIALS OF THE PHYSICIAN'S ARMAMENTARIUM

NEW YORK KANSAS CITY DETROIT, MICH. SAN FRANCISCO WINDSOR, ONTARIO
SYDNEY, AUSTRALIA AUCKLAND, NEW ZEALAND

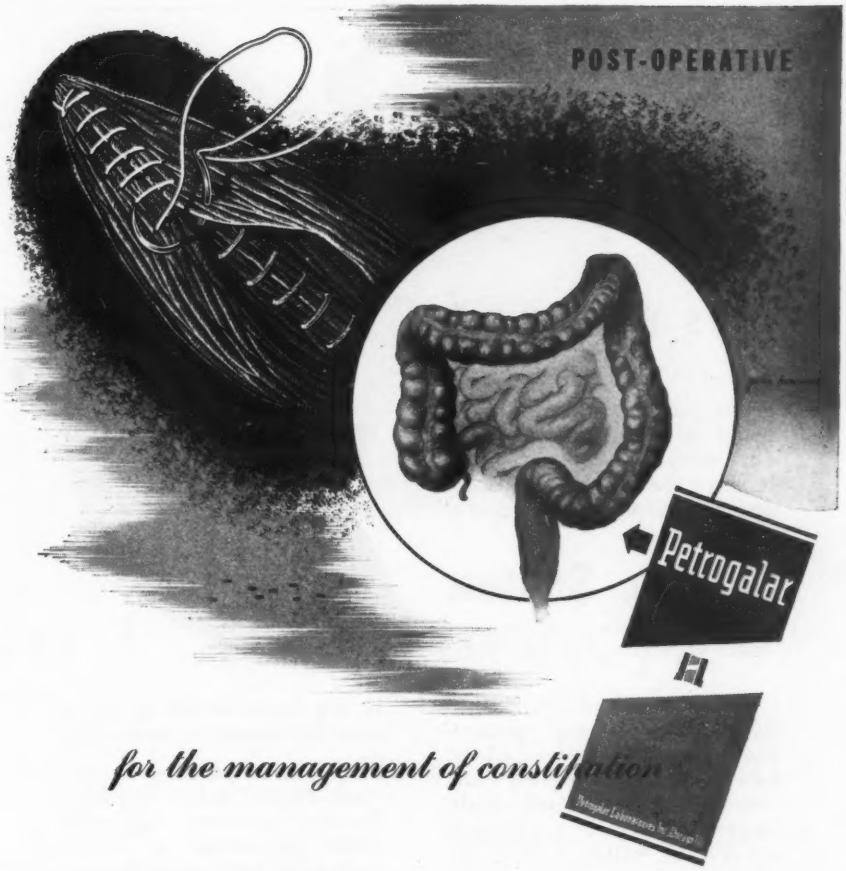
IT'S RHYTHMIC TIMING that counts . . . in bowel function too.

Agarol follows this principle closely: its exceptionally stable emulsion of pure medicinal mineral oil softens and lubricates the intestinal contents. At the same time, it furnishes gentle peristaltic stimulation, which follows from the even diffusion of pure, white phenolphthalein throughout the emulsion. The result is rhythmic timing, and easy and comfortable evacuation.

A complimentary trial supply of Agarol will be sent promptly if you will please write to our Department of Professional Service.

AGAROL

WILLIAM R. WARNER & CO., INC., 113 West 18th St., New York City



for the management of constipation

Restoration of Habit Time for Bowel Movement after surgery can be accomplished intelligently by the use of mild, efficacious Petrogalar.

After surgical interference, compensation for lack of exercise—gentle aid to tired intestinal muscles—easily gliding, painlessly motile bowel contents are requirements of importance.

Years of professional use have established Petrogalar as a reliable, efficacious aid for the restoration and maintenance of comfortable bowel action.

Petrogalar Laboratories, Inc.
8134 McCormick Blvd. Chicago, Illinois

PETROGALAR IS AN AQUEOUS SUSPENSION OF PURE MINERAL OIL EACH 100 CC. OF WHICH CONTAINS 65 CC. PURE MINERAL OIL SUSPENDED IN AN AQUEOUS JELLY.

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Petrogalar
REG. U.S. PAT. OFF.

Constant uniformity assures palatability—non-interference with secretion or absorption—normal fecal consistency. Five types of Petrogalar provide convenient variability for individual needs.

Eyes open at 7

When you prescribe a sedative which is potent enough to induce sleep, you desire also that it leave the patient refreshed and wide-awake in the morning.

BUTISOL SODIUM

(Sodium salt of 5-ethyl-5-secondary butyl barbituric acid "McNeil")

The hypnotic effect of Butisol Sodium occurs approximately within a half-hour after administration and terminates in about eight hours, followed by a complete awakening within a short period.

Sleep induced by Butisol Sodium is restful and sound and is not accompanied by excessive depression on awakening.

Despite its potency and efficient clinical activity, Butisol Sodium presents the additional advantage of safety. Extensive tests have shown it to be less toxic than phenobarbital in comparable effective doses.

Butisol Sodium is available in capsules, each containing 1½ gr.

Supplied in bottles of 100, 500 and 1,000.

(A trial supply is available to physicians on request)

McNeil Laboratories
INCORPORATED
PHILADELPHIA • PENNSYLVANIA

For Liberty * BUY WAR BONDS * For Victory

In Childhood...

and Adolescence

LOOK AT THE BLOOD

TRADEMARK

In childhood and adolescence, the total hemoglobin increases with growth, and the store of iron in the body must be maintained proportionately. It is acknowledged that this added need for iron may be difficult to obtain from the food and, consequently, must be supplied as medication. Excellent results are offered by the use of specially prepared iron (easily assimilated ferrous sulphate—Plain or with Liver Concentrate) incorporated in . . .

*Hematinic Plastules**

THE BOVININE COMPANY ☆ CHICAGO

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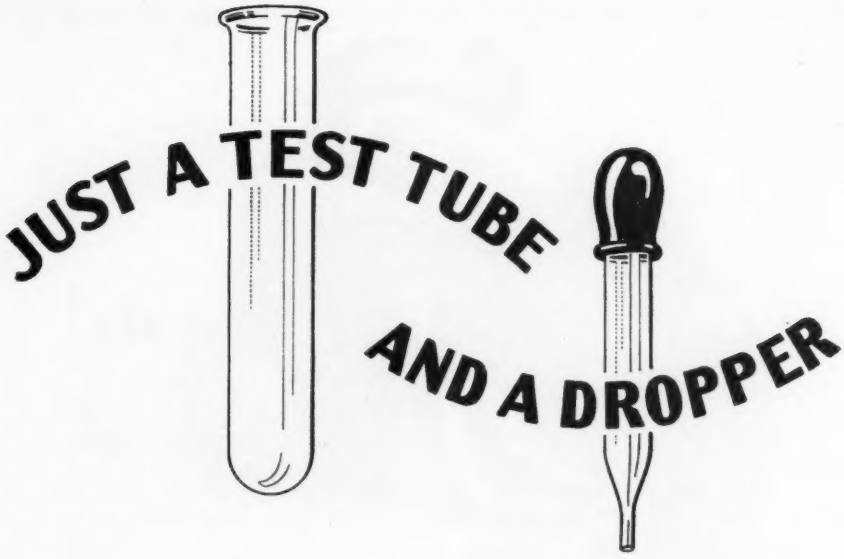


That's all the apparatus you need when you analyze for Urine-Sugar

WITH

CLINITEST

TABLET METHOD

A Copper Reduction Test

A SIMPLE, TIME-SAVING TECHNIC

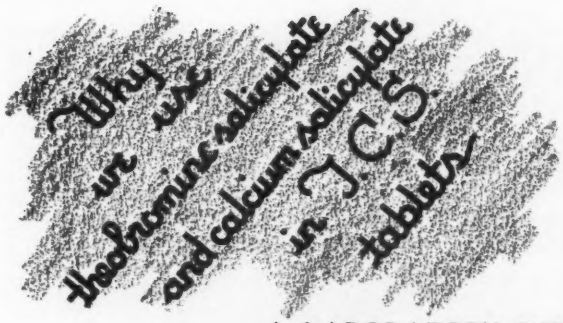
❶ 5 drops urine + ❷ 10 drops water + ❸ Clinitest Tablet

Allow for reaction—then compare with color scale.

NOTE: *No External Heating Employed.*

Available through your prescription pharmacy or medical supply house. Write for full descriptive literature. DEPT. SM 9

EFFERVESCENT PRODUCTS, INC.
ELKHART, INDIANA



A LABORATORY EXPERIMENT

IN THIS experiment an exact duplication of gastric and intestinal environments was attempted in order to determine the percentage of different forms of theobromine dissolved by the hydrochloric acid of the stomach and the percentage of theobromine in a soluble and absorbable state after passing through the acidity of the stomach and the mild alkalinity of the small intestine. Fifteen minutes was decided upon as the average time the theobromine tablet would remain in the stomach before passing into the small intestine and .1N. HCL (pH 1.4) as the average stomach acidity it would encounter. The mixture was slowly agitated during the fifteen minutes. To duplicate the intestinal conditions this synthetic gastric mixture was slowly alkalinized with sodium bicarbonate to pH 7.3 and slowly agitated for two hours. pH 7.3 was selected as the average pH of the small intestine and two hours as the average time required for the theobromine to progress far enough down the small intestine for most of the absorption of the theobromine into the body to have occurred. The percentage of each form of theobromine dissolved after the gastric environment and after the gastro-intestinal environments was determined by filtering the mixtures and assaying the theobromine in the filtrates.

LOWER GASTRIC SOLUBILITY INDICATES BETTER TOLERANCE.

HIGHER INTESTINAL SOLUBILITY INDICATES SUPERIOR ABSORPTION AND EFFICIENCY.

Form of theobromine tested	Indicated Gastric Solubility Percentage theobromine dissolved after 15 minutes in .1N. HCL—pH 1.4	Indicated Intestinal Solubility Percentage theobromine dissolved after 15 minutes in pH 1.4, followed by 2 hours in pH 7.3
TCS (Theobromine Salicylate Calcium Salicylate)	26.86%	86.92%
Theobromine (alkaloid)	29.07%	45.43%
Theobromine—Sodium Salicylate (Diuretin)	31.57%	78.23%
Theobromine and Sodium Acetate	34.56%	53.99%

TCS

EACH TABLET CONTAINS

Theobromine Salicylate.....Grs. 6
Calcium Salicylate.....Gr. 1
Phenobarbital.....Gr. ¼

TCS Tablets are issued in bottles of 50 and 250 tablets each

INDICATIONS and DOSAGE

Hypertension, Angina Pectoris: One tablet, 3 or 4 times a day. Reduce dosage with improvement

Myocardial insufficiency, cardiac edema, acute cardiac conditions: Two to three tablets, 3 or 4 times a day. Reduce dosage with improvement

WILLIAM R. Poythress & CO. INC.
RICHMOND VIRGINIA

Helps Fill
NUTRITIONAL GAPS IN THE WARTIME DIET

Over 1/3 of the nation's supply of protective foods is going to the armed forces and lend-lease.

Nutritional deficiencies, particularly in vitamins and minerals, are likely to become more prevalent as the war progresses. To fill certain gaps in the wartime diet arising from food rationing and shortages, more and more physicians now depend on . . .

VI-SYNERAL
(FUNK-DUBIN)

VITAMINS: A — B_1 — B_2 (G) — C — D — E — Niacinamide
and small amounts of other B Complex factors

MINERALS: Calcium, Phosphorus, Iron, Iodine, Magnesium, Manganese, Copper, Zinc

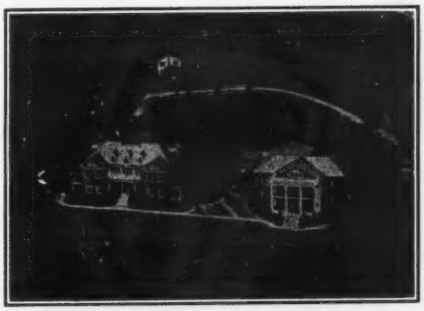
Vi-Syneral insures a "safety margin" of important vitamins, fortified with minerals . . . equivalent in vitamin-mineral content to many pounds of vegetables, fruits, and dairy products.

FIVE DISTINCT, INDIVIDUAL POTENCY BALANCES:

- ADULTS • INFANTS and CHILDREN (up to 6)
- CHILDREN and ADOLESCENTS (6 to 16)
- EXPECTANT and NURSING MOTHERS
- SPECIAL GROUP (Middle-Aged and Aged)

Literature and Samples Upon Request

U. S. VITAMIN CORP



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RADFORD, VA.

A modern, ethical institution, fully equipped for the diagnosis, care and treatment of nervous and mental diseases and selected addiction cases. 2,000 feet elevation. Rates reasonable. Occupational and Hydrotherapy Departments.

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ALLEN'S INVALID HOME

Established 1890 MILLEDGEVILLE, GA.

For the treatment of

NERVOUS AND MENTAL DISEASES

Grounds 600 Acres — Buildings Brick, Fireproof — Comfortable — Convenient — Site High and Healthful

E. W. ALLEN, M.D., Department for Men
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Terms Reasonable

THE NEW YORK POLYCLINIC

MEDICAL SCHOOL AND HOSPITAL

(ORGANIZED 1881)

(The Pioneer Post-Graduate Medical Institution in America)

For the General Surgeon

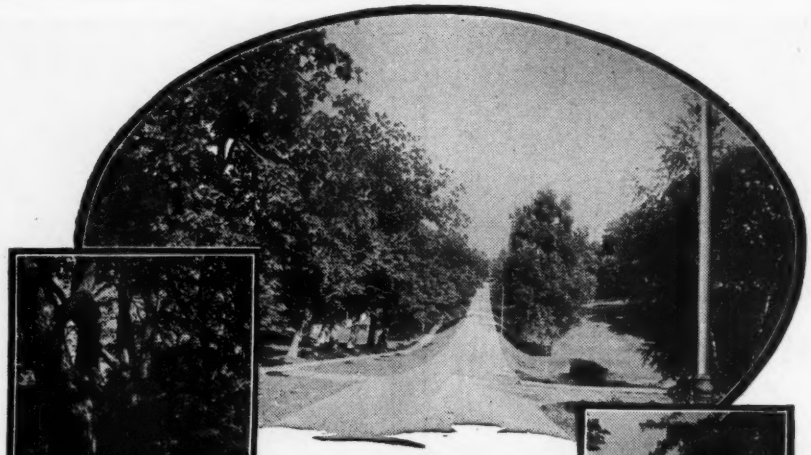
A combined surgical course comprising general surgery, traumatic surgery, abdominal surgery, gastroenterology, proctology, gynecological surgery, urological surgery. Attendance at lectures, witnessing operations, examination of patients preoperatively and postoperatively and follow-up in the wards postoperatively. Pathology, roentgenology, physical therapy. Cadaver demonstrations in surgical anatomy, thoracic surgery, regional anesthesia. Operative surgery and operative gynecology on the cadaver.

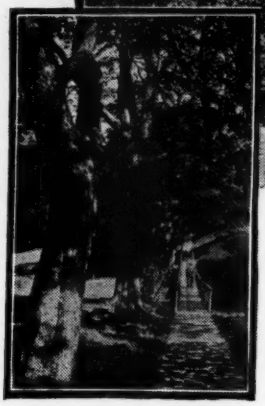
Obstetrics and Gynecology

A full time course. In Obstetrics: Lectures; prenatal clinics; witnessing normal and operative deliveries; operative obstetrics (manikin). In Gynecology: Lectures; touch clinics; witnessing operations; examination of patients preoperatively; follow-up in wards postoperatively. Obstetrical and Gynecological pathology; regional anesthesia (cadaver). Attendance at conferences in Obstetrics and Gynecology. Operative Gynecology on the Cadaver.

FOR INFORMATION ADDRESS

MEDICAL EXECUTIVE OFFICER, 345 West 50th Street, NEW YORK CITY





The

Cincinnati Sanitarium

Inc. 1873

For Mental and Nervous Diseases

A strictly modern hospital fully equipped for the scientific treatment of nervous and mental affections. Situation retired and accessible. For details write for descriptive pamphlet.

Emerson A. North, M.D.
Charles Kiely, M.D.
Visiting Consultants

D. A. Johnston, M.D.
Medical Director

H. P. COLLINS, Business Manager
Box No. 4, College Hill
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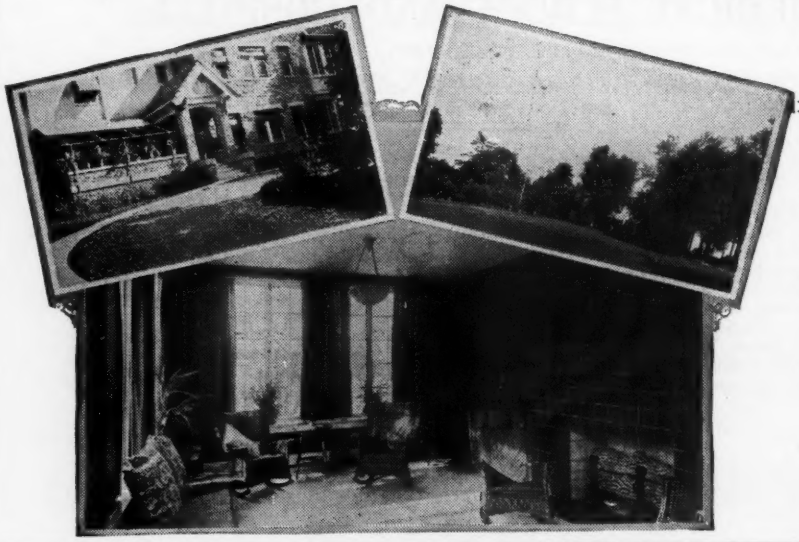
"REST COTTAGE" College Hill, Cincinnati, Ohio



For purely nervous cases, nutritional errors and convalescents.

Completely equipped for hydrotherapy, massages, etc.

Cuisine to meet individual needs.

Emerson A. North, M.D.
Charles Kiely, M.D.
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HILL CREST SANITARIUM

FOR NERVOUS AND MENTAL DISEASES AND ADDICTIONS

Insulin and Electro-Shock Therapy used in Selected Cases. Gradual Reduction Method used in the Treatment of Addictions
Established in 1925

Thoroughly modern in architecture and construction. Eight departments—affording proper classification of patients. All outside rooms, attractively furnished. Several bathrooms and rooms with private bath on each floor. Also a spacious sun parlor in each department. Located on the crest of Higdon Hill, 1050 feet above sea level, overlooking the city, and surrounded by an expanse of beautiful woodland. Ample provision made for diversion and helpful occupation. Adequate night and day nursing service maintained.

JAMES A. BECTON, M.D., Physician-in-charge

P. O. Box 2896, Woodlawn Station, Birmingham 6, Ala. Phones 9-1151 and 9-1152

S. N. BRINSON, M.D.
Medical Director

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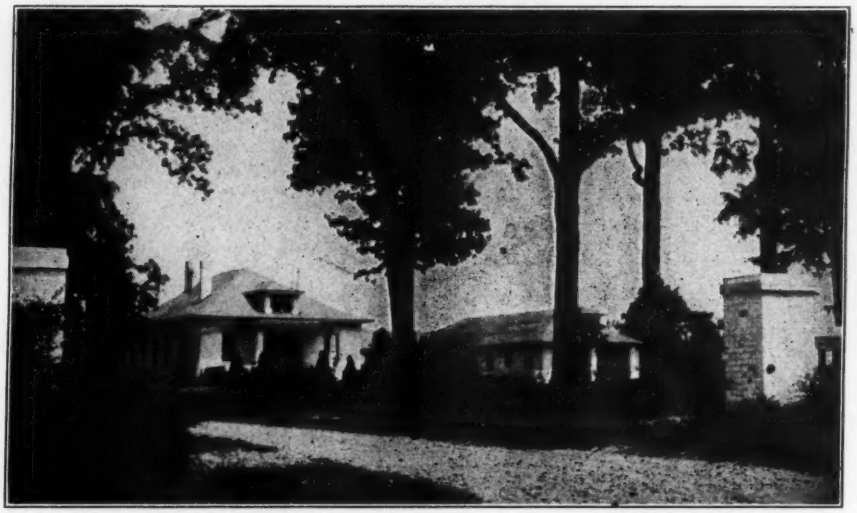

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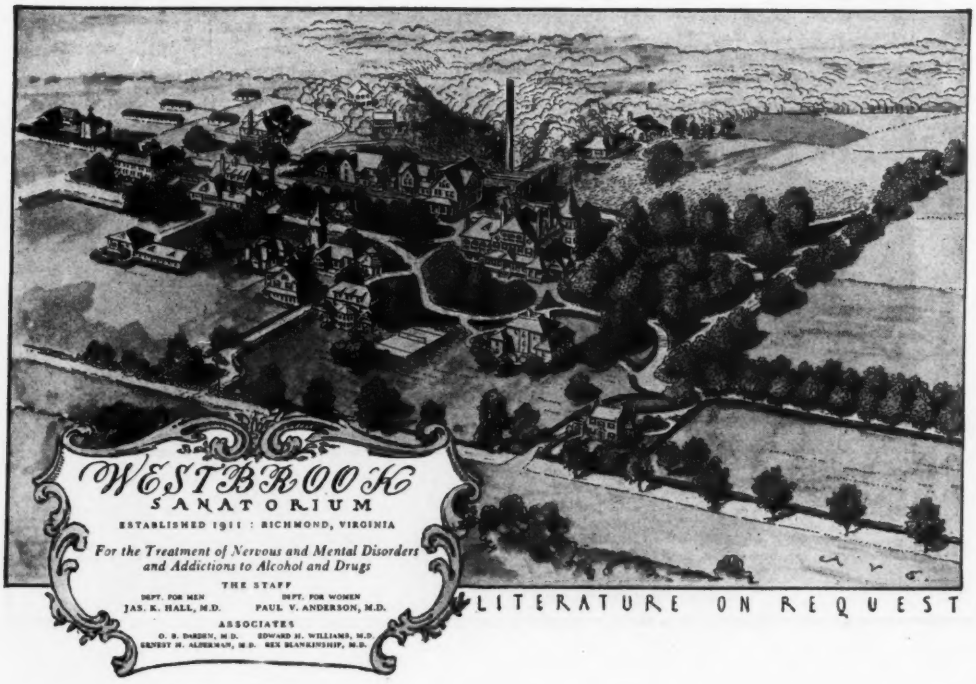
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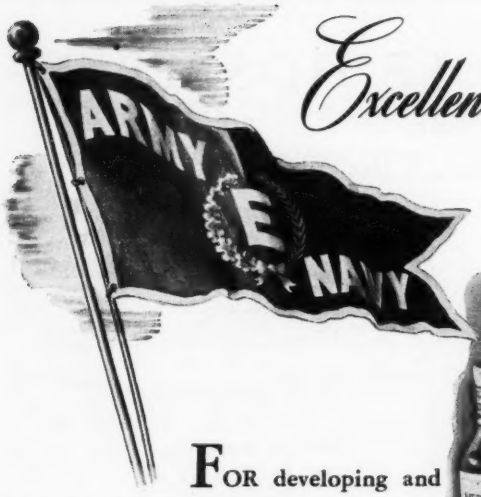

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NUTRITIONAL DEFICIENCY AS AN ETIOLOGIC FACTOR IN ICTERUS ACCOMPANYING PNEUMONIA IN THE NEGRO*

By EDWARD L. TURNER, M.D., F.A.C.P.
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Nashville, Tennessee

During the period 1936-38 seventy-four cases of lobar pneumonia in Negro adults were studied on the medical service of George W. Hubbard Hospital. Fifty (67.7 per cent) of these seventy-four cases were observed to have icterus at some stage during their illness.

Although it has been well known that icterus is present in some cases of pneumonia, and this fact has been recorded by many authors, the frequency of the condition observed in this group of patients was unusually high. Cecil[1] states that jaundice occurs in 5 to 10 per cent of cases of lobar pneumonia and that the lighter form which is observed most frequently seems to have no clinical significance while the deeper jaundice seen in other cases is associated with toxic hepatitis and a grave prognosis. Musser[2] describes the jaundice that is present in a small number of cases of lobar pneumonia as often existing in connection with an enlarged liver and tender area in the region of the gallbladder. Meakins[3] barely mentions jaundice as a result of metastatic lesions in the liver in lobar pneumonia. Emerson[4] suggests that the jaundice seen at times in pneumonia may be due to the absorption of alveolar exudate or the slowing of portal circulation.

*Received for publication May 7, 1943.

*From the Departments of Medicine, Bacteriology and Pathology, Meharry Medical College, Nashville, Tennessee.

Christian[5] remarks that the jaundice of lobar pneumonia occurs with a curious irregularity in different years, and he points out that it occurs more commonly in the Negro patient where it sets in earlier. He furthermore states that the jaundice of lobar pneumonia is not an unfavorable sign and that jaundiced patients frequently do unusually well.

Elton,[6-9] in his careful studies, indicated that jaundice is more common and more intense in the lobar pneumonia of Negro patients than that observed in whites. His studies also show that biliary pigment is always increased during pneumonia.

Bianchi,[10] Eppinger[11] and Maugeri,[12] in their studies on jaundice accompanying pneumonia, all indicate that the cholemia of pneumonia has a pulmogenic origin and that this excess of bile pigment cannot be handled by the liver rapidly enough to avoid icterus.

Chierici[13] reported jaundice in 23 per cent of his cases of pneumonia and he also stated that bilirubin was above normal levels in all cases of lobar pneumonia.

In an effort to determine the possible underlying cause of the high incidence of jaundice in pneumonia in the group of patients studied by the authors, Turner, Bent, Grant and Holloway[14] conducted a series of studies on normal Negroes to rule out any detectable basic physiologic factor that might be responsible. Christian, Elton and others had noticed that jaundice occurred more commonly in Negro patients with pneumonia. Were there basic physiologic factors characteristic of race that might be responsible for this difference? These studies were made on fifty-six Negro school children between the ages of 6 and 16 and thirty-eight young Negro adults between the ages of 17 and 23. Erythrocyte and leukocyte counts, hemoglobin determinations, bleeding time, coagulation time and corpuscular fragility tests were made on each individual. All findings observed in this group were within normally accepted physiologic values.

Attempts were then made by Turner, Bent, Holloway and Cuff[15] to reproduce Maugeri's experiment on the rabbit. Maugeri[12] had introduced defibrinated and washed rabbit corpuscles into the lungs of rabbits by tracheal insufflation. He felt he had proven that the jaundice obtained was of pulmogenic origin because the amount of bilirubin present in the blood was increased on the third and fourth days following the third or fourth insufflation. Maugeri reported positive bilirubin increases in fifteen of the sixteen animals observed.

Using the technics described by Maugeri on six rabbits the authors were unable to confirm his findings except in a single animal. All of the six rabbits were subjected to lung insufflations with 8.0 c. c. of defibrinated and washed rabbit blood corpuscles suspended in saline at seventy-two hour intervals. Each animal received five such insufflations. Blood was drawn at 12, 24, 48 and 72 hour intervals for van den Bergh tests. At the end of the experiment all animals were autopsied and careful studies made of the lungs and livers. The single animal which gave the positive van den Bergh had marked liver damage and evidence of a chronic cholangitis. The livers of the five other rabbits were normal. This failure to obtain positive van den Bergh reactions in all of the animals except one with a severely damaged liver suggested the probability that in pneumonia liver damage might be the essential factor underlying the production of the jaundice. If the presence of jaundice as a complication of pneumonia did depend upon liver damage, what possible factor or factors were responsible for the high incidence of liver involvement in this series of pneumonia patients?

A careful survey of the case histories showed no correlation between the incidence of syphilis or alcoholism and the appearance of icterus during the course of pneumonia in this group. Most of the patients were ward charity cases. They came from homes where the economic status was very low and where nutrition was frequently most haphazard. Irregular meals, poorly balanced diets, foods overcooked until heat vulnerable factors were thoroughly destroyed were common findings. Incidentally the period 1936-38 was a time when unemployment among Negroes in the Nashville area was very high and adequate nutrition was a serious problem. A frequently encountered type of diet consisted of corn bread, fat "side meat," turnip greens and sorghum. Usually the "side meat" and turnip greens were cooked together for at least two hours or more. It seemed logical, therefore, to determine whether jaundice appearing so frequently in this group of patients might be due to the action of the pneumococcic infection on a liver already vulnerable as a result of nutritional deficiency.

Evidence has been increasing during recent years to indicate that there is a definite relationship between nutritional deficiencies and pathologic changes in the liver. MacLean and Best[16] observed that the livers of rats fed on high fat diets were full of fat deposits. They demonstrated that such fatty deposits could be prevented by giving adequate amounts of choline. When diets deficient in vitamin B complex were administered to rats György and Goldblatt[17-18] obtained fatty necrotic livers. The addition of vitamin B complex through the use of yeast prevented these changes. Rich and Hamilton[19] produced cirrhosis of the liver in rabbits on a deficient diet and prevented such changes in animals where yeast was added to the regime. Patek and Post[20] have shown that adequate diets high in protein, carbohydrate and vitamin plus large doses of brewers' yeast tend to improve patients with hepatic cirrhosis. Snell[21] has also shown improvement in cirrhosis with high carbohydrate diets accompanied by high vitamin intake.

EXPERIMENTS

The studies reported in this paper were designed to test whether diets of the type used by the group of patients might have been responsible for the appearance of icterus during the course of pneumonia. Twenty-two healthy dogs were selected, eight being used as controls and fourteen placed on restricted diets. The eight control animals were fed on well balanced diets with adequate vitamin intake for periods of 27 to 55 days before pneumonia was induced. The fourteen animals on restricted diets were subjected to a regime of fat "side meat," boiled turnip greens, corn bread and sorghum for periods ranging from 21 to 49 days before inducing pneumonia. This diet was high in fat, low in protein and deficient in vitamin B complex factors. Accurate records on food consumption were kept throughout the entire period of observation. It is of interest to note that the animals in the control group maintained excellent appetites for their food and remained in good condition throughout the experiment. Although ample food was furnished to the animals on the restricted diet, they all lost weight and progressively rejected increasing amounts of the fat "side meat" in their diet. These animals con-

sumed all of the turnip greens, corn meal and sorghum.

Studies were made on the van den Bergh reactions of both control and restricted diet groups before inducing pneumonia. The diazo reagent was prepared fresh for each test and the qualitative direct test for bilirubin in the blood was used. All twenty-two animals gave negative van den Bergh tests prior to induction of pneumonia (See *Tables 1* and *2*).

At intervals of 21 to 55 days from the beginning of the experiment pneumonia was induced in all of the animals. This was accomplished by insufflating the lungs with a mixture of 6.0 c. c. of equal parts of 8 per cent mucin and 24-hour blood broth cultures of pneumococci (Type 1 Robertson strain) suspended in 15 c. c. of autogenous blood. Nungester and Jourdonais[22] suggested the use of mucin as an aid in experimental production of lobar pneumonia.

Van den Bergh tests were made twice daily on all of the animals in the control and restricted diet groups following the insufflation of the lungs. Seven of the eight control dogs survived the experiment until pneumonia developed and they were subsequently sacrificed for autopsy study. Not one of these seven control animals developed a positive van den Bergh reaction after the induction of pneumonia. Nine of the fourteen animals on restricted diets survived until pneumonia developed and autopsies were made. All nine of these animals on the restricted diets developed positive van den Bergh reactions in from one to four days following the induction of pneumonia. It is of considerable interest to note that the animals kept on restricted diets for the longest periods before in-

CONTROL GROUP

Diets Consisted of Mixed Table Scraps from Hospital Kitchen

Dog Number	Weight at Beginning of Experiment	Weight at End of Experiment	Number Days on Diet Before Inducing Pneumonia	van den Bergh		Observations
				Before Pneumonia	After Inducing Pneumonia	
25	2.50K	2.60K	—	Neg.	——	Animal found dead on fourth day of experiment.
27	5.00K	5.45K	34	Neg.	Neg.	Lungs: Massive pneumonia. Liver: Toxic and hemorrhagic degeneration.
28	6.60K	9.00K	43	Neg.	Neg.	Lungs: Congestive phase of pneumonia. Liver: Central degeneration, edema and hemorrhages.
34	7.20K	6.60K	27	Neg.	Neg.	Lungs: Dark red and atelectatic, early pneumonia. Liver: Congestion of blood vessels and sinusoids. No fatty degeneration.
35	8.20K	8.00K	48	Neg.	Neg.	Lungs: Lobar pneumonia. Liver: Hydropic vacuolation of hepatic cells. Toxic edema of liver. No fatty changes.
36	7.50K	7.00K	41	Neg.	Neg.	Lungs: Fibrinopurulent lobar pneumonia. Liver: Congestion and dilation of sinusoids. No fatty degeneration.
37	6.10K	5.90K	55	Neg.	Neg.	Lungs: Late stage of pneumonia. Liver: Essentially normal.
38	5.90K	6.02K	34	Neg.	Neg.	Lungs: Foci of bronchial pneumonia. Many plugged bronchioles with atelectasis of alveoli. Liver: Congestion of portal veins.

Table 1

RESTRICTED DIETS

Diets Restricted to Fat Meat, Turnip Greens, Corn Meal and Sorghum

Dog Number	Weight at Beginning of Experiment	Weight at End of Experiment	Number Days on Diet Before Inducing Pneumonia	van den Bergh		Observations
				Before Pneumonia	After Inducing Pneumonia	
22	7.30K	6.10K	21	Neg.	Positive	Lungs: Diffuse pneumonia. Liver: Generalized fatty degeneration.
23	5.10K	5.00K	47	Neg.	——	Lungs: Diffuse pneumonia. Liver: Generalized fatty degeneration.
24	5.34K	4.54K	47	Neg.	Positive	Lungs: Massive confluent pneumonia. Liver: Marked bile stasis and marked fatty degeneration.
26	6.93K	5.20K	—	Neg.	——	Animal found dead on 17th day of experiment.
29	6.82K	6.10K	28	Neg.	Positive	Lungs: Pneumonia, right lung. Liver: Extensive fatty degeneration of the hepatic cells.
30	6.36K	4.55K	49	Neg.	Strong Positive	Lungs: Advanced pneumonia. Liver: Diffuse fatty changes, less marked around portal areas. Fatty necrosis of the liver.
31	5.00K	3.30K	35	Neg.	Positive	Lungs: Mottled pink color, rubbery in consistency. Marked congestion. Liver: Marked fatty degeneration and necrosis.
32	4.33K	2.40K	—	Neg.	——	Animal died on 41st day of experiment.
33	5.70K	5.00K	42	Neg.	Strong Positive	Lungs: Massive lobar pneumonia. Liver: Diffuse fatty degeneration of hepatic cells.
39	2.61K	1.48K	—	Neg.	——	Animal died on 33rd day of experiment. Autopsy showed pneumonia. Marked fatty necrosis of the liver.
40	4.02K	3.75K	34	Neg.	Strong Positive	Lungs: Lobar pneumonia. Liver: Marked fatty degeneration and necrosis. Periportal hepatic cells less extensively destroyed.
41	3.52K	3.30K	34	Neg.	Strong Positive	Lungs: Lobar pneumonia. Liver: Extreme fatty necrosis of liver. The hepatic cells least affected appear in small groups around portal areas.
42	2.84K	2.30K	28	Neg.	Positive	Lungs: Lobar pneumonia, early gray hepatization. Liver: Diffuse generalized fatty necrosis.
43	5.00K	4.88K	—	Neg.	——	Animal died on 27th day of experiment. Autopsy showed pulmonary infarct. Liver: Marked fatty necrosis.

Table 2

ducing pneumonia all developed positive van den Bergh reactions within 24 hours and these reactions were strongly positive. These animals included dogs number 30 (39 days), 23 and 24 (47 days), 40 and 41 (34 days), 33 (42 days). Animals number 29 and 42 (28 days) and 22 (21 days) developed less strongly positive reactions (*Table 2*).

Five of the eight control dogs died of pneumonia in from one to four days. Ten of the fourteen dogs on restricted diet died from pneumonia in from one to twenty-two days. All of the control and restricted diet groups were carefully autopsied.

Pathologic studies were made of the lungs and livers of all animals. The lungs of all animals demonstrated various stages of pneumonia. There was a marked difference in the findings in the livers in the control and restricted diet groups. Cloudy swelling with congestion of the hepatic vessels and sinusoids was present in the livers of the control animals. The livers of the animals on the restricted diet showed extensive fatty degeneration. The reaction was most intense in the center of the lobules and tended to spread peripherally. The fatty changes were less marked around the portal areas. The bile capillaries and ducts showed no change of importance. Sections from the liver and lung of animal No. 36 are characteristic of the findings obtained in the control group (*Fig. 1*). Sections from the liver and lung of animal No. 29 are typical of the findings observed in the animals who had been kept on restricted diets (*Fig. 2*).

SUMMARY

Studies have been made to determine the possible etiologic factor responsible for the high incidence of icterus accompanying lobar pneumonia in a group of seventy-four Negro patients observed in George W. Hubbard Hospital during the period 1936-38. Basic physiologic differences of racial nature between white and Negro individuals were ruled out by a series

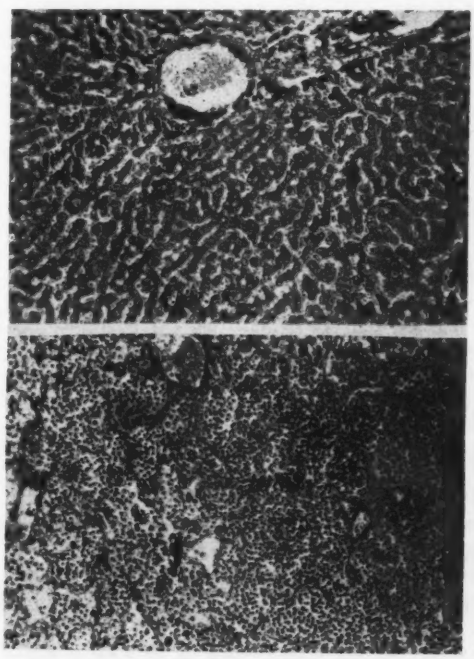

Fig. 1
Liver and lung sections from control animal No. 36 (x225).

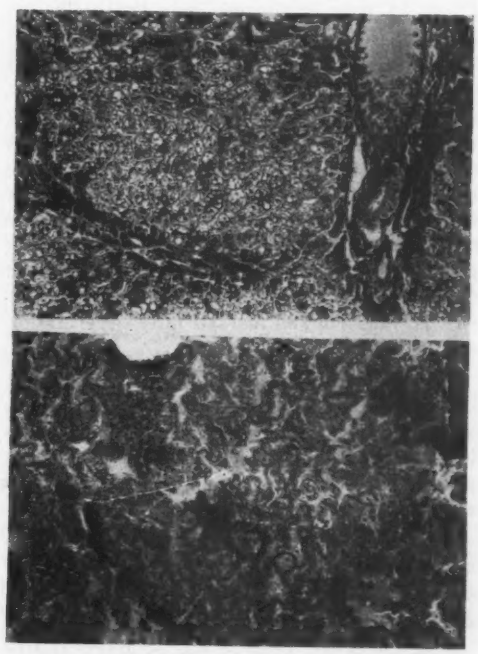

Fig. 2
Liver and lung sections from one of the animals on the restricted diet (animal No. 29) (x225).

of studies on normal Negro children and young adults. In these preliminary observations erythrocyte and leukocyte counts, hemoglobin levels, bleeding and coagulation times and corpuscular fragility were all found to be within accepted normal limits.

Because of the high incidence of unemployment and the low economic status of large groups of individuals during the 1936-38 period it was noted that considerable malnutrition was encountered. Many of the patients in this group had lived for long periods before contracting pneumonia upon diets limited to fat "side meat," corn meal, overcooked turnip greens and sorghum. Such a diet carries an excess of fat, is relatively deficient in protein and low in vitamin content.

Attempts were made experimentally to reproduce the situation encountered in these patients in a group of dogs. Fourteen dogs were placed on diets identical in character with those used by the patients prior to their illness and after 21 to 55 days pneumonia was artificially induced in these animals. Eight dogs were used as control animals and were given well balanced diets prior to inducing pneumonia. All of the control and restricted diet animals had negative van den Bergh reactions prior to the development of pneumonia. Following the induction of pneumonia all of the control animals gave consistently negative van den Bergh reactions while all of the restricted diet animals gave repeatedly positive van den Bergh reactions. Pathologic changes in the livers of the dogs upon the restricted diets showed marked fatty degeneration and necrosis.

It is of interest to note that with the advent of the sulfa drugs in the treatment of pneumonia and with the improved economic situations there has been a marked decrease in the incidence of jaundice accompanying pneumonia in Negro patients since 1938.

It is the opinion of the authors that on the basis of the experimental and clinical data presented it is justifiable to conclude that the high incidence of jaundice observed in our patients during the period 1936-38 was definitely related to improper nutrition. One of the factors underlying jaundice as a complication of lobar pneumonia is therefore nutritional. There is little or no scientific data that will support any suggestion of a racial predisposition to jaundice in the Negro and there is increasing evidence to indicate that inadequate diets reflect themselves in liver changes of major importance. This work also suggests that clinicians might well afford to pay more attention to the problem of diet in pneumonia than is the usual custom in this relatively short lasting disease.

Further studies are being conducted to determine whether animals on a basic restricted diet of the type used can be prevented from developing positive van den Bergh reactions after pneumonia is induced by the use of brewers' yeast. A subsequent report will be made of these studies.

REFERENCES

1. Cecil, R. L.: Textbook of Medicine, Fifth Edition, p. 129. Philadelphia: W. B. Saunders Co., 1940.
2. Musser, J. H.: Internal Medicine, Second Edition, p. 142. Philadelphia: Lea & Febiger, 1936.
3. Meakins, J. C.: Practice of Medicine, Third Edition, p. 243. St. Louis: C. V. Mosby Co., 1940.
4. Emerson, C. P.: A Textbook of Medicine, First Edition, p. 30. Philadelphia: J. B. Lippincott Co., 1936.
5. Christian, H. A.: Osler's Principles and Practice of Medicine, Thirteenth Edition, p. 20. New York: D. Appleton-Century Co., 1935.
6. Elton, N. W.: Physiology, Correlations and Technic of van den Bergh Reactions, Icterus Index and Quantitative Serum Bilirubin. Jour. Lab. and Clin. Med., **17**:1-13, 1931.
7. Elton, N. W.: Pathologic Physiology of Icterus. Rev. Gastroenterol., **2**:331-334, 1935.
8. Elton, N. W.: Pathologic Physiology of Icterus: Mechanism of Jaundice. Rev. Gastroenterol., **3**:35-42, 1936.
9. Elton, N. W.: Pathologic Physiology of Icterus: Jaundice in Clinical Entities. Rev. Gastroenterol., **3**:132-142, 1936.
10. Bianchi, G. S.: Sulla patogenesi dell'ittero nellaopolmonite. Riv. ops., **24**:447-451, 1934.
11. Eppinger, H.: Uber schwer heilbare Fussgeschwure bei hamolytischem Ikterus. Klin. Wchnschr., **9**:10-12, 1930.
12. Maugeri, S.: Die pulmonogene Entstehung des Ikterus. Beitrag zur Kenntnis der extrahepatischen Bilirubinbildung. Beitr. Z. path. Anat. u. z. Path., **86**:375-386, 1931.
13. Chierici, A.: La natura dell.'ittero nella polmonite lobare. Riforma Med., **48**:1944-1946, 1932.
14. Turner, E. L.; Bent, M. J.; Grant, W. H.; and Holloway, G. D.: Icterus Complicating Pneumonia: Corpuscular Fragility in the Normal Negro. Proc. Soc. Exp. Biol. and Med., **37**: 481-483, 1937.
15. Turner, E. L.; Bent, M. J.; Holloway, G. D.; and Cuff, J. R.: Icterus Complicating Lobar Pneumonia in the Negro Patient. J.N.M.A., **34**:47-52, 1942.
16. MacLean, D. L.; and Best, C. H.: Choline and Liver Fat. Brit. Jour. Exper. Path., **15**:193, 1934.
17. Gyorgy, P.; and Goldblatt, H.: Hepatic Injury on a Nutritional Basis in Rats. Jour. Exper. Med., **70**:185, 1939.
18. Gyorgy, P.; and Goldblatt, H.: Choline as a Member of the Vitamin B_2 Complex. Jour. Exper. Med., **72**:1, 1940.
19. Rich, A. R.; and Hamilton, J. D.: The Experimental Production of Cirrhosis of Liver by Means of a Deficient Diet. Bull. Johns Hop., **56**:185, 1940.
20. Patek, A. J.; and Post, J.: Treatment of Cirrhosis of the Liver by Nutrition Supplements Rich in Vitamin B Complex. Jour. Clin. Invest. **20**:481-505, 1941.
21. Snell, A. M.: Recent Advances in Treatment of Hepatic Disease. Minnesota Med., **23**:551-556, 1940.
22. Nungester, W. J.; and Jourdonais, L. F.: Mucin as Aid in Experimental Production of Lobar Pneumonia. Jour. Inf. Dis., **59**:258-265, 1936.

TREATMENT OF FRACTURES OF BOTH BONES OF THE LEG BY CONSERVATIVE METHODS*

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In spite of the excellent treatment of the subject in some of our recent textbooks, one is impressed with the unsatisfactory results obtained in many of these fractures. Even when one visits the fracture service of our modern hospitals he sees that the principles and technic are exceedingly poorly carried out and operative and skeletal treatment resorted to because of failure to follow the conservative measures efficiently. Since most articles appearing in the current literature deal with the operative procedures or apparatus to secure skeletal traction, it is little wonder that many surgeons feel that a large percentage of fractures of both bones of the leg require the more radical measures. It has been our feeling for several years that almost all uncomplicated fractures of these bones are amenable to conservative treatment and that even compound fractures should have the minimum amount of surgery in order to accomplish a debridement, cleansing and suture when indicated. Regardless of where the fracture is in the shafts of the bones, as long as the knee and ankle joints are not involved the principles are the same and the technic varies very slightly.

In the treatment of fractures of both bones of the leg the objects are, as have been described by Key and Conwell in their splendid text: (1) to secure union; (2) to restore the normal alignment of the leg; (3) to restore normal length of the leg; (4) to prevent equinus; (5) to secure anatomic reposition of the fragments. But all of these objects must be carried out with the least possible additional damage to the structures involved, and to accomplish this complete reduction and efficient fixation are of prime importance.

It has been our experience that the time element is of great import. We have observed that cases seen within the first few hours are very easily reduced without an anesthetic and usually the earlier the more easily. Realizing this, we have made a practice of reducing these cases just as early as possible. The patient is placed on the operating table in the emergency room on admission and as soon as the fracture is recognized by clinical examination reduction is done and the cast applied. Time is not taken for temporary splinting or an x-ray, both of which would delay reduction and probably allow additional injury to the soft tissues. When efficient traction is applied, lateral pressure at the site of fracture has accomplished satisfactory reduction and in none of our cases in this series has it been necessary to angulate the fragments in order to secure end-to-end reduction. In regard to fixation we have felt that a properly applied plaster cast offers the best method of fixation and analysis of results in this series seems to bear this out.

Our method of reduction and application is a modification of Wilson's technic, but differs in several essential points.

A four-inch muslin bandage is split longitudinally in its center sufficiently to allow it to be slipped over the dorsum of the foot and heel as a hitch. At the ends of the split a piece of adhesive plaster one-half of an inch in width is placed across the bandage to prevent further splitting (*Fig. 1*).

The ends of the bandage are then carried around the body of the assistant and gradual traction is applied to the foot by the assistant's leaning backward (*Fig. 2*). Counter traction is supplied by the perineal rod of the Hawley table or a strap around the table fitting well up in the groin of the unaffected side (*Fig. 3*) As the assistant puts gradual and efficient traction by means of the hitch, controlling the position of the foot with his hands, the fracture is reduced by lateral pressure. This is carried out with the knee straight.

After this has been accomplished the foot, ankle, leg and lower one-third of the thigh are wrapped with a single layer of sheet wadding. A circular plaster cast is applied from the toes to the knee, care being taken to mold it well about the foot, ankle, heel and head of the tibia, traction being kept constantly on the foot, which is held at a right angle and with slight inversion (*Fig. 4*). It has been our observation that with the knee kept straight and the foot at a right angle, with sufficient traction, there is very little if any tendency for the leg to sag, producing a backward bowing, as the posterior calf muscles are kept tight, supporting the bones of the leg and acting as a bow string.

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*Read in General Clinical Session, Southern Medical Association, Thirty-Sixth Annual Meeting, Richmond, Virginia, November 10-12, 1942.

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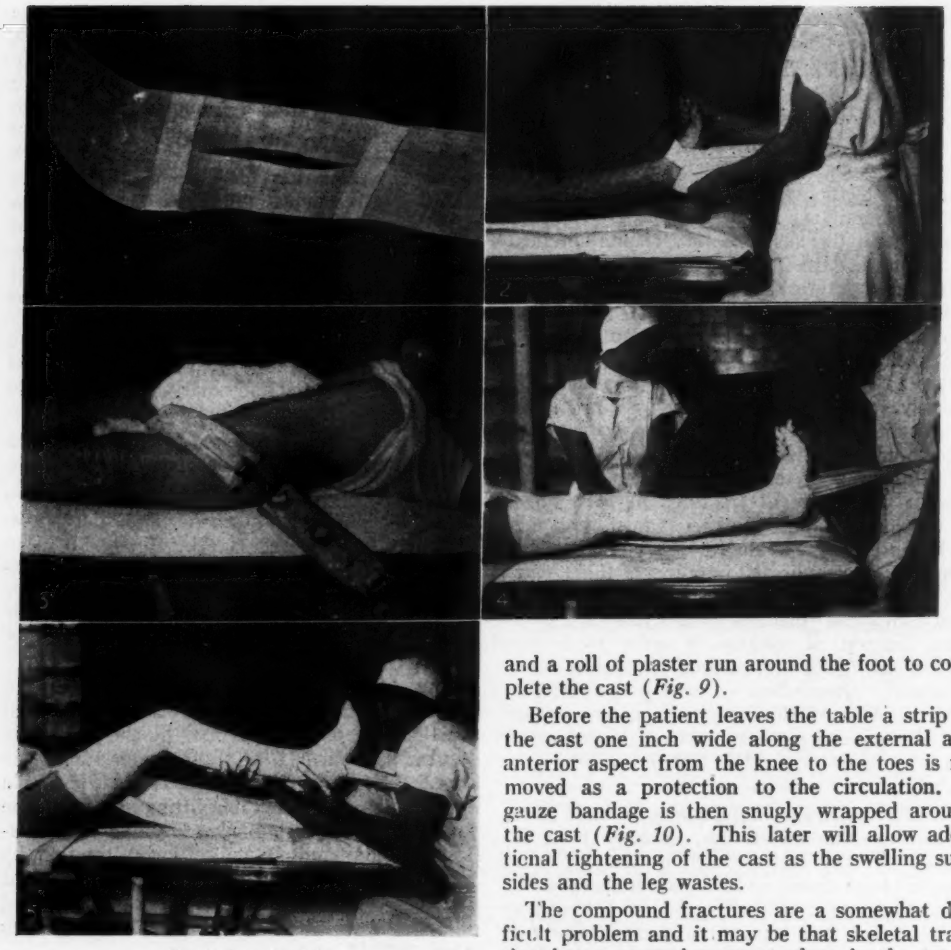


Figs. 1, 2, 3, 4 and 5

As soon as the first applied part of the cast has hardened traction is eased, the knee flexed from 45-60 degrees, and the cast is completed to the middle of the thigh (*Fig. 5*).

When the cast is well set, it is split upward on each side of the foot from the point where the traction bands come out at the sole to a point on each side where the muslin around the foot and heel make a very small section of an ar *Figs. 6-A* and *6-B*). The muslin bandage on the outside is cut to the end of the split and from the inside the muslin is slipped out (*Figs. 7* and *8*). The split part of the cast is then put back and a roll of plaster run around the foot to complete the cast (*Fig. 9*).

Before the patient leaves the table a strip of the cast one inch wide along the external and anterior aspect from the knee to the toes is removed as a protection to the circulation. A gauze bandage is then snugly wrapped around the cast (*Fig. 10*). This later will allow additional tightening of the cast as the swelling subsides and the leg wastes.

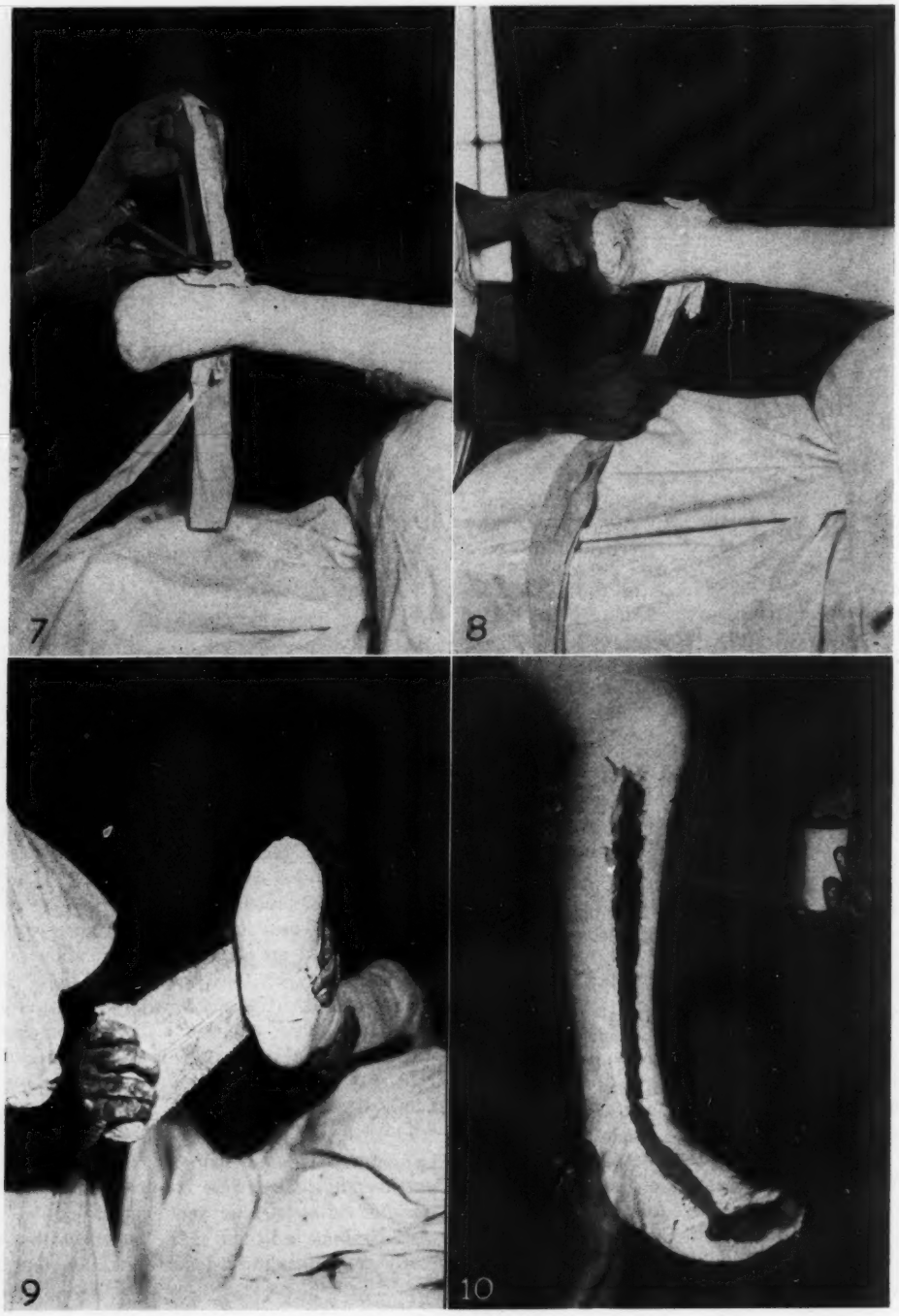
The compound fractures are a somewhat difficult problem and it may be that skeletal traction has a more important place in the treatment of these cases. It is our practice, however, to take these cases immediately to the operating room and as soon as the shoe and sock have been removed to apply traction with the hitch. The skin around the wound is painted with iodine or mercresin and the limb is draped. Under procaine infiltration in the cases with little soft tissue damage the wound is thoroughly washed out with normal saline solution and ether being used in those cases with grease or oil contaminating the wound. The edges of the wound are excised and a debridement done, and following this thorough irrigation with saline is again carried out. Sulfathiazole powder or preferably a mixture of sulfathiazole and sul-

Figs. 6-A and 6-B

fanilamide is dusted in between the muscles and fascial planes and around the bone ends. While traction is still applied by gentle manipulation the fragments are brought into their proper position. In the early cases (those under 8 hours) primary closure is carried out without drainage, but with care not to close under tension. The cast is then applied. In the more extensively damaged cases, sodium pentothal or inhalation anesthesia is used and a thorough debridement attempts to remove all devitalized muscle and fascia. Small completely detached bone fragments are usually removed. Generally it has been our practice to close these cases after the irrigation, introduction of the sulfonamides and reduction if within the first eight hours, but only if the wound can be closed without tension. Otherwise, after reduction, the wound is lightly packed with vaseline gauze and the cast applied. Regardless of the severity of the injury the keynotes of the treatment are gentleness, thoroughness and the institution of treatment as early as possible to prevent infection. Anti-tetanus serum is given immediately and the sulfonamides are given by mouth. The cast or wound is not disturbed until the stitches are to be removed, usually on the tenth day or the vaseline-packed case the fourteenth day unless evidence of infection takes place. Elevation of temperature for the first few days does not justify meddling unless the patient appears toxic or the circulation in the toes or odor suggest gas infection. In these cases the wounds should be inspected through large fenestrations so as not to have the skin and soft tissues bulging through a small window and interfering with the local circulation. Of the 108 compound fractures we had only one case of gas infection which was not fatal, but did require amputation in the middle third of the thigh.

The danger of pressure sores, necroses and interference with circulation when the cast is applied over the hitch has been mentioned and should be remembered. In the series of cases on which we have used the hitch and it has been removed as has been suggested, we have never had any trouble from these sources even in very small children. Within the last six years we have treated all fractures of both bones of the leg by conservative means, no skeletal traction or operation for open reduction having been employed. We have stressed the importance of adequate reduction and efficient fixation, feeling that method to be much more practical from the teaching standpoint, and our results were actually better than when the more radical methods were employed. In presenting this series covering the cases for the past 6 years, we have not attempted an elaborate classification of all the various types. We believe that these cases as a whole would be the average of those of any other hospital or clinic with the possible exception of special industrial hospitals or clinics. The grouping has been for the sole purpose of study of conservative methods and we regret to have no other series for comparison (*Table 1*).

Of the thirty-two compound fractures with infection only sixteen were severe. Twelve of these resulted in shortening and angulation and had definite bone infection. We have felt that the early reduction and adequate fixation that the



Figs. 7, 8, 9 and 10

288 FRACTURES IN 279 PATIENTS

Severity	Compound 108 (31 became infected)	Simple 180			Total 288
Type	Oblique 126	Spiral 61	Transverse 101 (165 of 288 comminuted)		288
Anesthetic	Gas and Ether 98	Spinal 1	Intravenous 15	None or local 174	288
Time of reduction after injury	Under 2 hrs. 184	Under 8 hrs. 76	Over 8 hrs. 28		288
Angulation after reduction	Post. 20	Ant. 8	Int. 24	Ext. 4	56
	All angulation corrected later except in 16 cases.				
Shortening of more than 1 cm. after reduction	More than 1 cm. 16		More than 2 cm. 12		28

12 corrected by second operation.
Of the 16 with permanent shortening 4, 1¼ cm; 8, 2½ cm; 4, 4½ cm.
All of these were compound comminuted cases.

4 cases of non-union in series (all compound).

28 cases delayed union (over 10 weeks).

Table 1

plaster afforded were the big factors in keeping the percentage of infections in these cases as low as it was.

A slight amount of pain was complained of in the cases that were reduced without anesthetic. Especially was this true of the cases reduced under two hours after the injury. We feel that gentleness in handling the limb is a great factor in this. In the cases which required later correction of the angulation, either by wedging the cast or change of cast before firm union had taken place, the posterior angulation was the most difficult to correct. In none of our cases was there any marked permanent angulation.

There were four cases of simple fracture which had over 1 cm. of shortening. The 12 cases that had one inch or more of shortening had such severe infection that it was necessary to remove the original cast before any union had taken place. Institution of skeletal traction at that time would probably have been wise.

CONCLUSIONS

From a study of the above series we feel that:

(1) Most cases of fracture of both bones of the leg not involving the adjacent joints can be satisfactorily treated by traction and fixation in a plaster cast and do not require open operation or skeletal traction.

(2) The majority of the cases reduced within the first two hours after injury can be satisfactorily reduced and fixed without an anesthetic and without additional shock to the patient. Fractures in children and especially nervous adults, some compound fractures and fractures over eight hours old should be reduced under general anesthetic.

(3) Reduction by traction with the knee straight and the foot at a right angle helps to prevent backward angulation at the site of fracture.

(4) Use of a proper hitch which can be removed offers no real danger of pressure even when the cast is applied with sufficient traction to accomplish and maintain reduction.

(5) Those twelve cases of compound fractures with extensive infection following, which resulted in shortening of over one inch, probably should have been treated with skeletal traction later.

MONILIASIS OF THE EXTERNAL EAR CANAL*

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The term moniliasis is frequently used to indicate an infection with one of the yeast-like organisms. During the past few years much work has been done to clarify our concept of mycology,[1] and much progress has been made in various attempts to separate and classify the saprophytic and pathogenic fungi. The yeast-like fungi most frequently encountered are the (1) Monilias, (2) Cryptococci, and (3) Mycodermas. The Monilias are subdivided into several strains of which Monilia albicans is considered pathogenic and Monilia candida, Monilia parapsilosis, Monilia krusei and other strains are considered saprophytic.

In 1922 Greenbaum and Klauder[2] reported 35 strains of yeast-like organisms and concluded that yeasts are found normally on the skin and may, under certain conditions, become pathogenic and cause superficial infection. Similar observations were made by Jessner and Kleiner,[3] and Staehelin, Mu and von Schouwen.[4]

Benham and Hopkins[5] cultured the skin of 100 normal individuals and among the yeast-like fungi those most frequently encountered were the cryptococci and mycodermata. A few non-pathogenic species of monilia were encountered, but Monilia albicans was never found. Robinson and Moss[6] did not find Monilia albicans on the skin of normal individuals. Strains other than Monilia albicans were not found virulent when injected into rabbits and their pathogenicity for man was never proved. Therefore, their significance was considered doubtful in lesions where found and they were considered saprophytic in nature.

From these recent works the term moniliasis has been restricted to a definite group of dermatoses in which the species, Monilia albicans, can be found.

For many years sprue has been considered as caused by Monilia albicans. However, in contrast to the negative findings of Monilia albicans on the skin, 18 per cent[5] of normal individuals showed persistently Monilia albicans in the feces. Ashford, the main protagonist of the theory that Monilia albicans causes sprue, in later years regarded sprue as primarily caused by nutritional imbalance complicated by a monilia infection. An interesting article on the etiology of sprue has recently been published by Vedder.[7]

Infections of the broncho-pulmonary system with Monilia albicans have been reported. The symptoms are usually those of pulmonary tuberculosis and, in severe cases, the disease may terminate fatally. Monilia albicans has been found in osteomyelitis.[9] Semo and Smith reported a meningeal involvement.[10]. Karnaky[11] and other investigators considered the Monilia cause of many cases of vaginitis.

On the body Monilia albicans can be cultured from various specific dermatoses. Intertrigo with its well defined, bright red, exuding patches with scalloped borders is a familiar picture to all dermatologists. The common sites of monilial intertrigo are the axillae, the infra-mammary folds, the groins, umbilicus, intergluteal folds (some cases of pruritus ani are reported, on the interdigital webs of the fingers (erosio interdigitalis blastomycetica) and feet.

Intra-oral thrush manifested by a whitish, loosely adherent membrane on the inner surface of the cheeks, palate or mucosa, and many cases of superficial glossitis often associated with a stomatitis are caused by Monilia albicans as well as many cases of paronychia and onychia.

Textbooks on dermatology and ear, nose and throat do not mention Monilia albicans among the causative agents of otomycosis. In reviewing the current literature, I was able to find only two references to a specific case of the involvement of the external ear canal due to Monilia albicans.[12 13]

CASE REPORT

A white woman, aged 36, came to the office complaining of excessive dandruff, a rash and itching of both ears. She also complained of recent deficiency in hearing and occasional pain in her right ear.

Examination showed a well developed and nourished white woman with a marked seborrheic dermatitis of the scalp. Greasy, scaly patches of seborrheic eczema involved the back of her neck and ears. The area over the mastoid region showed an acute oozing postauricular eczema aggravated by self-medication. Examination of the left ear canal showed a dark mold-like moist growth which involved almost the entire circumference of the ear canal. At the distal end was a whitish patch of wet blotting-paper-like appearance about 0.5 cm. in diameter obstructing the tympanic membrane from view. Hearing apparently was reduced because of mechanical obstruction to the sound waves by the collected discharge of debris.

The right ear showed at the end a small patch of foul material similar to that of the left ear. From the middle of the lower part of the ear canal, almost reach-

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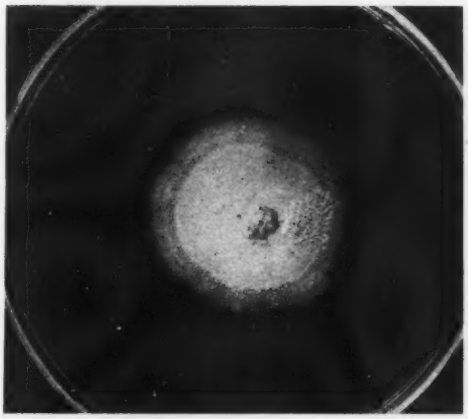

Fig. 1

Five weeks old culture, wet, pasty and cream-colored. The surface is smooth except for two areas where it has honeycombed appearance due to ruptured air bubbles.

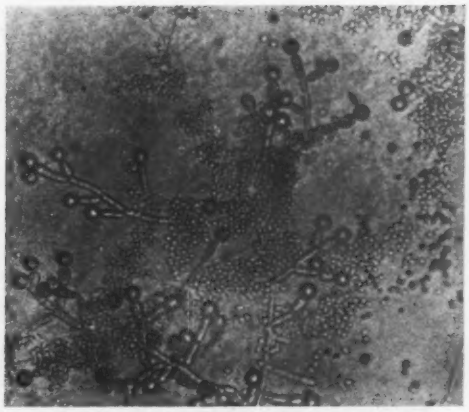

Fig. 2

Culture mount showing clusters of spores in rounded masses along the septate hyphae (mycelium). Chlamydospores appear as thick walled spores at the ends of the hyphae.

ing the tympanic membrane, was a moist, purulent material. The patient said that sometimes when she lay on her right side "water" would run out of her ear. When the ear was cleaned of this moisture an acutely inflamed, raw and edematous base was found. Microscopic examination showed yeast-like organisms, which later were cultured as Monilia albicans. The cultures from the mold-like growths showed Aspergillus fumigatus.

Treatment of the Ears.—The ear drums were normal in appearance. There was no tenderness over the mastoid. Pressure on the right ear caused a pain in the canal. Urine was negative. (Diabetics seem to be predisposed to monilia infection.) Treatment of the patient's ears was considered along with the routine dermatologic care for seborrheic eczema. Otomycosis usually responds well to treatment. Aspergillosis, whether on the exposed skin or in the ear, will rapidly respond to such fungicides as aromatic oils (oil of cloves, oil of cinnamon, etc.), metacresyl acetate (cresatin), thymol or keratolytics as salicylic acid which will cause desquamation of the epithelium. Infections with Monilia albicans, however, are found to be obstinate to the usual fungicides. MacFarlan, in his case of external ear involvement, recommends locally mercuric iodide in alcohol. Simms, in his case, used 1 per cent mercuric chloride in 50 per cent alcohol.

In dermatologic practice it was found that crystal violet and its compounds, gentian and methyl violet, showed marked specific action or selective activity on fungi of the genera monilia and torula.[14] Cornbleet,[15] Sutton and Lewis and others recommended the use of gentian violet.

With the patient lying on her side the external ear canals were filled daily with a 2 per cent solution of gentian violet. The solution was allowed to remain in each ear for five to ten minutes. The growth from which the aspergillus was cultured apparently dried within five days. The lesion from which Monilia albicans was cultured responded slowly, but, apparently, was dried and healed within ten days.

The routine examination of material from an ear canal or any skin lesion for fungi is easily carried out in the office. Culture tubes of Sabouraud's medium (Weidman's modification) in which the hydrogen ion concentration is from four to four and eight-tenths, will retard the growth of bacteria and allow a luxuriant growth of fungus at room temperature. The growth in most cases can be observed in two to five days.

Monilia albicans will show a wet, pasty and cream-colored growth, usually smooth surface, except near the center of the colony, where it has a honeycombed appearance due to ruptured air bubbles. A culture mount shows clusters of spores in rounded masses, budding cells, and the characteristic terminal chlamydospores (large, thick-walled spores).

Because Monilia albicans is found in the vagina and intestines of many normal individuals, these may be considered as carriers and the fecal material and vaginal secretions as the source of infection in predisposed areas of the skin, the cutaneous infection resulting in definite lesions. The possibility that certain strains of monilia

may become pathogenic under favorable circumstances must also be kept in mind. Our patient gave a history of using a hair pin quite frequently in an effort to remove wax from her ears and trauma of the external ear canal may have caused the *locus minoris resistentiae*.

REFERENCES

1. Lewis, George M.; and Hopper, Mary: An Introduction to Medical Mycology, 1940.
2. Greenbaum, S. S.; and Klauder, J. V.: Yeast Infections of the Skin. Arch. Derm. & Syph., **5**:332 (March) 1932.
3. Jessner, M.; and Kleiner, S.: Arch. f. Dermat. u. Syph., **149**:363, 1925.
4. Staehelin, A.; Mu, J. V.; and von Schouwen, M.: Arch. f. & Syph., **28**:532, 1933.
5. Benham, R. W.; and Hopkins, A. M.: Yeast-like Fungi on the Skin and Intestines of Normal Subjects. Arch. Dermat. & Syph., **28**:532, 1933
6. Robinson, R. W.; and Moss, M. C.: Superficial Glossitis and Perleche Due to Monilia Albicans. Arch. Dermat. & Syph., **25**:644, 1932.
7. Vedder, Edward B.: A Discussion of the Etiology of Sprue. Amer. Jour. Trop. Med., **20**:345 (May) 1940.
8. Bakst, Hazard; and Foley: J.A.M.A., **102**:1208, 1934.
9. Connor, C. L.: Jour. Infect. Dis., **43**:108 (Aug.) 1928.
10. Smith, L. W.; and Semo, M. E.: Moniliasis with Meningeal Involvement. Jour. Infect. Dis., **54**:187, 1935.
11. Karnaky, Karl J.: Trichomonas Vaginalis and Monilia Albicans as Causes of Leucorrhea. Sou. Med. Jour., **28**:795 (Sept.) 1935.
12. MacFarlan: Moniliasis of Ear and Throat: Tr. Amer. Laryng., Rhin. & Otol. Soc., **42**:249 (April) 1935.
13. Simms, Reuben F.: Moniliasis of the External Ear Canal. West Va. Jour. Med., **35**:462 (Oct.) 1939.
14. Cornbleet, T.: Use of Gentian Violet in Erosio Interdigitalis Saccharomycetica. Arch. Dermat. & Syph., **20**:184, 1929.
15. Sutton, R. L., Jr.: J.A.M.A., **110**:1733, 1938.

STERILITY IN THE FEMALE*

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The following study is an analysis of the case histories of 116 private patients whose primary reason for consulting us was that their efforts to produce offspring had failed. No attempt is made to define sterility. In many cases the barrenness has been of many years' duration; in others only a few months. We have not differentiated primary from secondary sterility. Although most patients had never been pregnant, a few cases of "one child" sterility occur in the series. Many cases classified as "habitual abortion" were eliminated. For statistical reasons patients consulting us for the first time during the past six months are not included.

Table 1 is an outline of the plan of study and investigation.

The procedures were explained to the patient and the necessity for diligent and complete cooperation was stressed. If the patient or the husband were not wholeheartedly interested in going through these investigative procedures and treatment to finality they were discouraged from beginning any treatment whatever. On this basis we have attempted to classify the degree of cooperation in *Table 2*, and the completeness of the study and treatment in *Table 3*.

A post-coital specimen of the husband's sperm was examined usually within one hour, the patient having been furnished a rubber hi-cup for insertion in the vagina immediately following intercourse in order to retain the semen. The cup is removed in the office, and semen aspirated from the cup is examined. If this specimen is unsatisfactory, a sheath specimen is later examined. No attempt at accurate sperm count is made and vital staining is done only on deficient specimens. A specimen is considered normal if the volume is 3.0 c. c. or more; if under the high

PLAN OF STUDY AND INVESTIGATION

History, complete physical examination with special emphasis on pelvic organs and endocrine system; special examinations to eliminate foci of infection when indicated.
Examination of sperm (post-coital vaginal specimen and/or sheath specimen).
Reference husband to urologist when indicated.
Examination fallopian tubes, transuterine pneumoperitoneum (Rubin), hysterosalpingography.
Endometrial biopsy.
Basal metabolic tests (husband and wife).

Table 1

TOTAL CASES 116

	No. Cases	Per Cent
Cooperation excellent	19	or 16
Cooperation good	52	or 45
Cooperation poor	34	or 30
Unclassified		9

Table 2

STUDY AND TREATMENT

	No. Cases	Per Cent
Complete	38	or 32
Incomplete	78	or 68

Table 3

*Read in General Clinical Session, Southern Medical Association, Thirty-Sixth Annual Meeting, Richmond, Virginia, November 10-12, 1942.

*From the Department of Obstetrics and the Department of Gynecology, Medical College of Virginia.

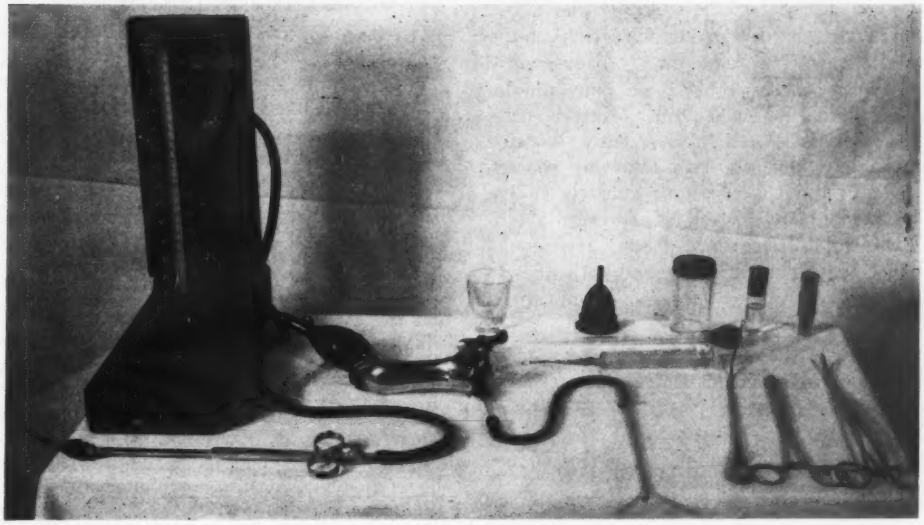

Fig. 1
Apparatus used in study and treatment of sterility, showing adaptation of blood pressure apparatus for Rubin test.

power field the entire field is covered with sperm cells, 85 per cent of which are actively motile; if the specimen does not contain an undue amount of mucus, leukocytes, and cellular debris. *Table 4* outlines the condition of the sperm involved.

We were surprised to learn that the sperm had not been examined in twenty cases, since this is the initial examination in our investigation, and we usually refuse to proceed with other examinations until this phase has been completed. However, we find that most of these instances have been in the more recent cases of the series during the time when travel has been difficult and it has been impracticable for the husband to absent himself from vital work and military stations.

In determining the patency of the fallopian tubes, hysterosalpingography using iodized oil as an opaque medium, is resorted to only after several repeated failures of the Rubin test. We have devised a simple apparatus for transuterine pneumoperitoneum by employing an ordinary mercury sphygmomanometer from which the arm cuff is detached and in its place a Jarcho uterine cannula is substituted. The change over requires only a few seconds. This apparatus has proven eminently satisfactory. There is a resiliency in the rubber bulb and tubing which prevents sudden changes in pressure and the mercury manometer is an accurate pressure gauge.

Table 5 depicts the percentages of patency and nonpatency of the fallopian tubes in this series and also the results of treatment in those of abnormal patency.

Interesting, and we believe, important data, are revealed in the analysis of the basal metabolic rate of the female partner. In 68 cases, or 82 per cent, the basal metabolic rate was below zero. In only 15 cases, or 18 per cent, was the basal metabolic rate greater than zero.

An analysis of the premenstrual endometrial biopsy is shown in *Table 6*.

Although an ovulatory type of endometrium was found in 84 per cent of cases biopsied, all of

ANALYSIS OF SPERM

Normal sperm specimen	63 cases or 70 per cent of cases examined
Total absence spermatozoa	8 cases or 8 per cent
Non-motile spermatozoa (necrospermia)	13 cases or 13 per cent
Deficient no. (non-motile and motile) oligospermia	12 cases or 13 per cent of cases examined
Spermatozoa not examined	20 cases

Table 4

these were not in the late secretory phase, but showed deficiencies in progesterone activity in the endometrium. One case was inadvertently biopsied after conception had taken place and delivered a normal infant at term. More recently, another case has been inadvertently biopsied approximately fourteen days following conception. This patient is now approximately twelve weeks pregnant and as yet no untoward symptoms or complications have arisen. If endometrial biopsy is done with care and with due regard to its contraindications, no complications should be expected.

Table 7 lists the various factors encountered in this series which could be regarded as detrimental to conception.

PATENCY OF FALLOPIAN TUBES

	No. Cases	Per Cent
Tubes patent to air	61	or 52
Tubes occluded, spasm or partial obstruction opened with air	20	
Tubes occluded to iodized oil	7	
Tubes occluded opened by operation (salpingoplasty)	2	
Total cases abnormal patency tubes improved by air or iodized oil	24	or 20
One tube absent	3	
Both tubes absent	1	
Total transuterine pneumoperitoneum (Rubin)	151	
Total hysterosalpingographies	8	
Complications	0	
Closed or absent tubes not affected by treatment	6 cases	

Table 5

ENDOMETRIAL BIOPSY

	No. Cases	Per Cent
Ovulatory endometrium	68	or 84
An-ovulatory endometrium	14	or 17
Patients biopsied	81	
Total endometrial biopsies	97	
Biopsies after conception	1	
Complications	0	

Table 6

FACTORS DETRIMENTAL TO CONCEPTION

	Times Noted	Per Cent
Uterine displacements (including cervix)	41	or 35
Infantile cervix and uterus	39	or 33
Chronic cervicitis and erosion	32	or 27
Endocrine dysfunction	24	or 20
Stenosis cervix	17	or 14
Chronic pelvic inflammation and adhesion	14	or 12
Dental, tonsilar, and sinus infection	5	or 4
Uterine myomata	4	or 3½
One or both tubes absent	4	or 3½
One ovary absent	2	or 1.7
Miscellaneous	12	or 10

Table 7

SUMMARY OF TREATMENT

	No. Cases	Per Cent
Husband referred to urologist	14	12
Endocrine therapy (not including thyroid)	21	18
Suspension uterus, lysis of adhesions, etc.	8	7
Salpingoplasty	2	1.7
Myomectomy	3	2.5
Oophorocystectomy	1	0.8
Dilatation and curettage	6	5
Stem pessary	2	1.7
Irradiation pituitary and ovaries	3	2.5

Artificial insemination (husband's sperm) 38 times in 16, or 14 per cent, of patients (resulting in 15 pregnancies). Our indications for artificial insemination with the husband's sperm include any developmental or anatomic condition which mitigates against normal insemination of the cervix. These include a shallow short vagina; infantile, conical cervix, pin-hole os, cervical stenosis, and cervix pointing forward or anteriorly away from the seminal receptacle of the vagina. Artificial insemination is done also when the seminal specimen is deficient in volume and contains only occasional but apparently normal, actively motile, spermatozoa.

Diseased cervices, treated by dilatation, cautery coagulation, or conization.

Movable retroposition of uterus corrected by Smith-Hodge pessary.

Pelvic congestion and kindred conditions by tampons, Elliott therapy, and diathermy.

Various endocrine products, gonodotropic and estrogenic were administered, the endometrial biopsy being the chief guide to therapy.

Thyroid extract to tolerance to all cases with basal metabolic rate below zero.

Wheat germ oil or ephynal acetate to husband and wife all cases.

Multiple vitamins, and attempt to improve general health and well being where indicated.

Table 8

SALVAGE AND RESULTS

37 or 31 per cent of patients became pregnant.	
No. living infants	37
Pregnancies undelivered	7
Total pregnancies	44
Ectopic pregnancy	1
Abortions	none
Fetal abnormalities	none

Table 9

It is significant that in a group of women who obviously fall into the category of abnormally low fertility, abortion did not occur a single time once conception took place. Although this is too small a series for us to draw dogmatic conclusions, perhaps the very fact that their infertility was recognized and that individual deficiencies in thyroid and other endocrine metabolism were recognized and corrected, and that they came under medical care very early in pregnancy, explains the absence of abortion.

It is of equal significance that in this group of women of recognized infertility no incidence of fetal abnormality or monstrosity occurred.

Monument Avenue and Lombardy Street

SPERM FLUCTUATIONS IN HEALTH AND DISEASE*

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Conditions which generally affect the various tissue cells of the body greatly predispose the spermatozoa of the male to alterations in number, vitality, and morphology. A careful study with several available tests indicates that both spermatozoa and semen undergo marked fluctuations in somatic health and disease.

MATERIALS AND PROCEDURE

During a four-year interval 39 donors submitted 447 ejaculates from which roughly 4,000 tests were made. Donors varied in age from 20 to 28, and were largely medical students

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*The expense of this investigation has been defrayed in large part by a stipend from Dr. Clarence J. Gamble, Milton, Massachusetts, of The National Committee on Maternal Health. Invaluable suggestions were made by Dr. Gamble and by Dr. T. K. Brown, St. Louis Maternity Hospital, Barnes Hospital, and Washington University Medical School, St. Louis.

†First Lieutenant, Medical Corps, U. S. Army Air Force.

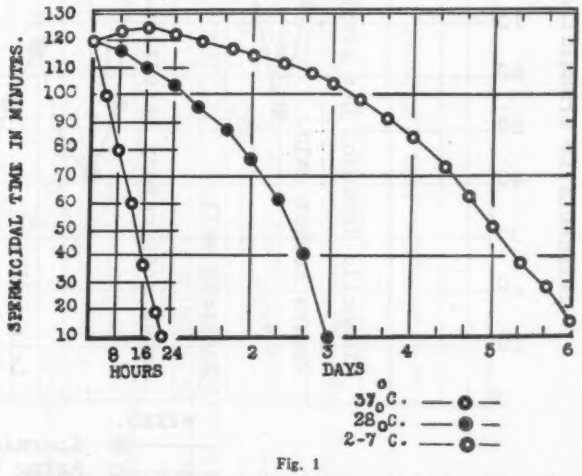

Fig. 1

The ejaculate was divided into three fractions; each fraction was stored at a different temperature. At periodic intervals simultaneous spermicidal tests were made and the phthalate times determined. The time interval which elapsed before the spermicidal time reached 2 to 3 minutes was called the aging time; complete cessation of motion occurred in approximately twice this time.

and internes. None had had venereal disease, orchitis, or epididymitis.[2]

Donor "T" was followed weekly, with intermissions, for a period of two years. Eighty-four ejaculates were studied. Spermicidal tests, aging tests, spermatozoa counts when indicated, and macro- and microscopic studies were made.

The spermicidal tests utilized determined the resistance of spermatozoa to chemically pure 2.8 per cent potassium acid phthalate. This aqueous solution was mixed by a specially devised micro-mixer in 1 to 1 ratio with semen which was collected under rigid standards and observed under the microscope with low power and oblique dark field illumination.[1] Approximately one million spermatozoa were observed to be immobilized before the spermicidal time was recorded.

The aging tests were made by repeating the phthalate test at regular intervals on semen kept at constant conditions, until the recorded spermicidal time was 2 to 5 minutes. This determined the decreased resistance of the spermatozoa with increasing age. The cessation of locomotion and motion was also recorded as a part of the aging process.

The macro- and microscopic appearance of the semen and spermatozoa were noted. The ejacu-

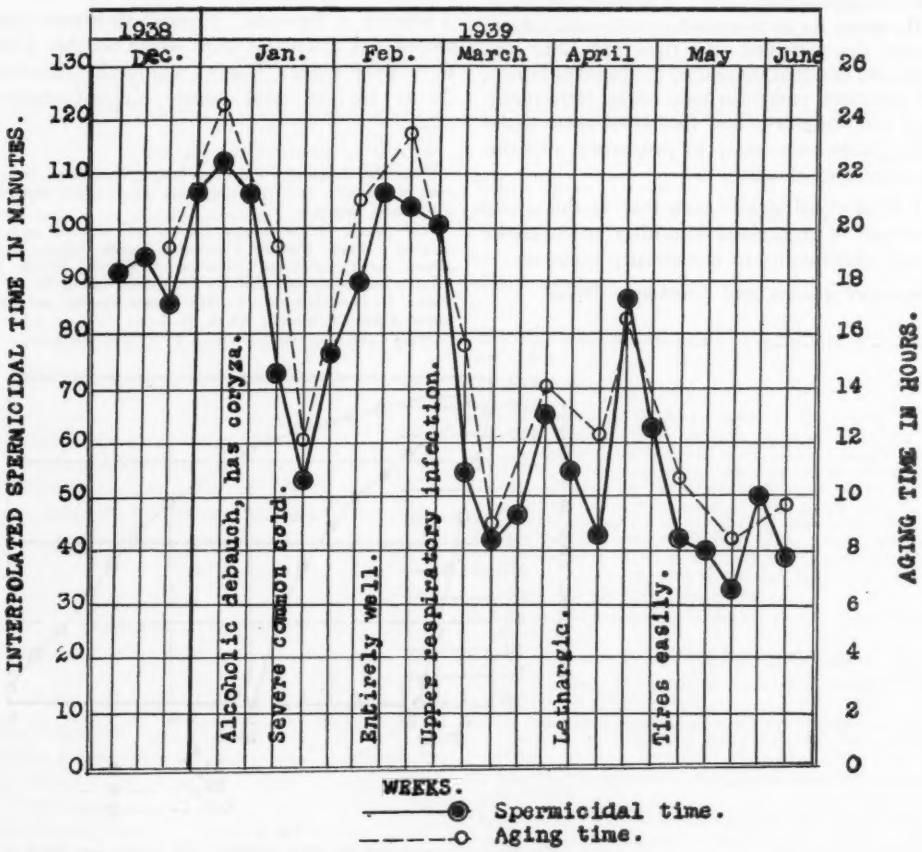

Fig. 2 (a)

Weekly spermicidal (phthalate) times and aging times at 37° C. were determined, with intermissions, for donor "T" over a period of two years. The aging curve when incomplete by test was projected as a normal spermicidal curve and noted as such. The asserted condition of the donor (a senior medical student) was recorded in his own words. Weekly records were taken, but only significant statements are here recorded.

late was measured in c. c. Counts were made on the counting chamber. The health of the donor, if medical student or interne, was recorded in his own words at the time the specimen was submitted.

RESULTS

The mean phthalate time* for all tested donors was 60 minutes, with a standard deviation of 29 minutes.[3] Donor "T," who was followed for two years, had a mean phthalate time of 64 minutes, and a standard deviation of 32 minutes. The initial spermicidal times, which were made ½ to 1½ hours after ejaculation, ranged from 3 to 133 minutes.

*Phthalate time is the spermicidal time of a 1:1 mixture of semen and 2.8 per cent potassium acid phthalate.

The aging process also varied remarkably. An ejaculate of approximately mean phthalate time, i.e., 60 minutes, had a spermicidal time of 2 to 5 minutes after 20 hours when kept constantly at 37° C.; the same spermicidal time obtained in 50 hours when kept at 27° C., and also after 120 hours at 5 to 7° C. The extremes in the aging times varied from 1 to 34 hours at 37° C., 1 to 100 hours at 27° C., and 1 to 170 hours at 5 to 8° C.* Complete cessation of motion required approximately double these times. A typical aging curve is presented in *Fig. 1.*

The counts varied from 17,000 to 133,000,000 spermatozoa per c. c. The volume of the ejacu-

*The one hour aging curve was from donor "T" at the time he had ulcerous membranous stomatitis and had a spermicidal time of only three minutes.

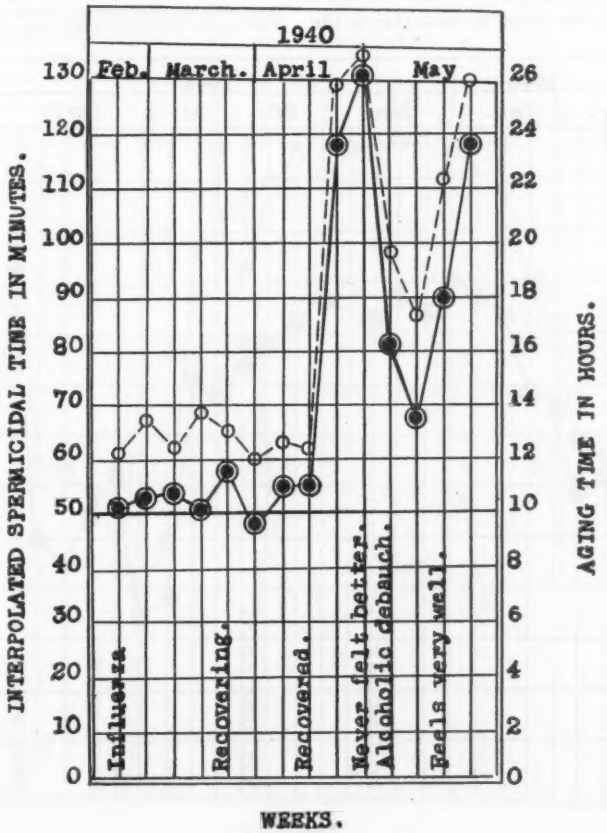

Fig. 2 (b)
(For explanatory legend see Fig. 2 (a).)

late varied from 0.5 to 12 c. c.; the average was about 4 c. c. *Fig. 2* gives the salient correlations of environmental factors which affected semen and spermatozoa in donor "T."

COMMENT

Fluctuations with Health.—The results of this extended study indicate that much of the extreme variability in spermicidal times and aging processes of spermatozoa may be correlated with donor environmental factors. Unexplained fluctuations are present, but the major fluctuations may invariably be ascribed to a specific somatic condition or conditions.

Health has a definite correlative effect on spermatozoa. During the recorded two-year interval, donor "T" was afflicted with five upper respiratory and related infections, no one of which necessitated absenteeism from academic classes. Following the onset of each illness the spermicidal time decreased abruptly, the aging process became accelerated, the spermatozoa count if the febrile symptoms were adequately severe was reduced, morphologically abnormal spermatozoa were more numerous, and the semen contained excessive germinal epithelial cells and cellular debris. There was no certain reduction in ejaculate volume. Complete recovery of spermatozoa occurred in approximately two months or less.

A severe case of ulcerous membranous stomatitis produced almost complete aspermia with marked acceleration of aging.[4] There was a 5- to 6-week interval of azospermia with only few devitalized spermatozoa remaining and these were probably incapable of effecting fertilization.*[7 5] The semen contained excessive ger-

*Locomotion was in evidence for only an hour, which is inadequate for fertilization.[6] The author is in agreement with Hammond[7] and Wolf that the power to enact fertilization is lost before active locomotion is obviously affected.

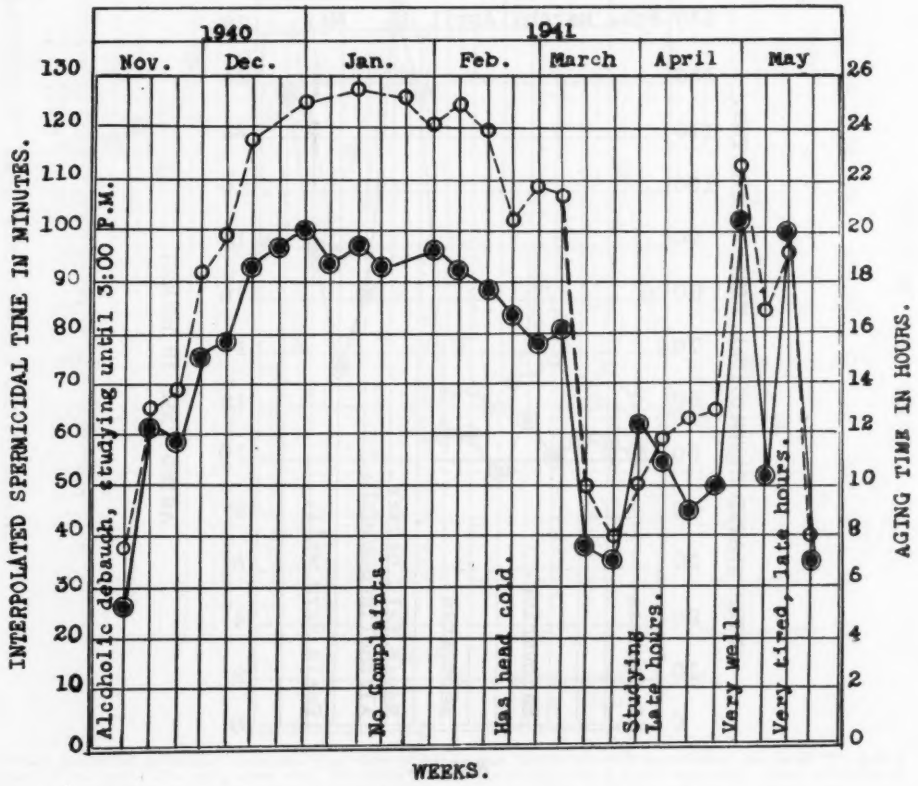

Fig. 2 (c)
(For explanatory legend see Fig. 2 (a).)

minal epithelial cells during the early recovery stage and later abnormal spermatozoa indicating adequate damage to prevent normal spermatogenesis.

Mills, in 1919, described germinal epithelial destruction in epidemic pneumonia. Transient to protracted sterility has been observed clinically in acute or febrile conditions. It is now apparent that this sterility need not be ascribed to azo- or aspermia or excessive morphologically abnormal spermatozoa alone, but may be caused entirely or in part by devitalized spermatozoa as measured by decreased spermicidal time and rapid aging.

Fluctuations with Excess.—Acute alcoholic debauches on three occasions decreased the spermicidal and aging time. The number of markedly devitalized and dead spermatozoa was also increased. Recovery followed within 2 to 3 weeks. Some other environmental factors were observed to affect spermatozoa similarly (*Fig. 2*).

Excessive sexual activity, as determined by daily ejaculation affected semen and spermatozoa. The ejaculate volume was reduced; the count per unit volume dropped markedly. The macro- and microscopic study showed decreased cellular content and increased fluidity of the semen. The spermicidal time was only slightly decreased with a chemical spermicide,* and the aging process at 37° C. was unaffected.[6]

SUMMARY

(1) Weekly human ejaculates from a senior medical student were studied in an attempt to determine if clinical febrile states and other environmental factors affected measurably the sperm.

(2) Common febrile states such as upper respiratory infection, influenza, and coryza de-

*Spermicides which had acidic properties had increased spermicidal effect, probably due to the decreased amount of glandular buffer secretions in the semen.

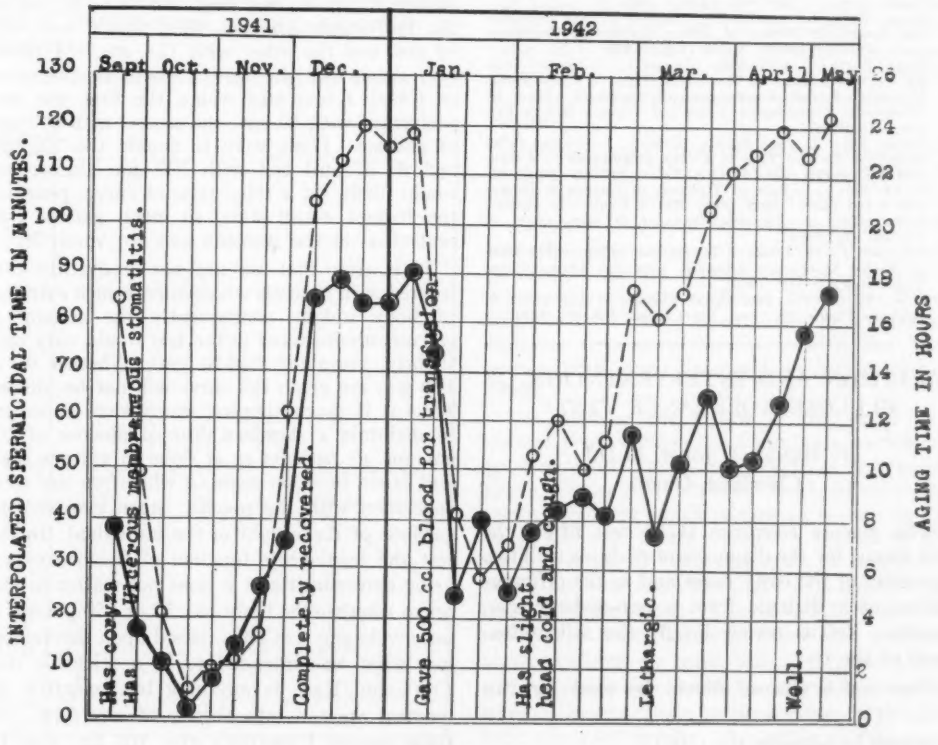

Fig. 2 (d)
(For explanatory legend see Fig. 2 (a).)

crease the resistance of spermatozoa to spermicides (spermicidal time) as well as to normal aging processes (aging time). Such spermatozoal devitalization is probably responsible for the frequently observed temporary sterility resulting from febrile states.

(3) Ulcerous membranous stomatitis produced a transient aspermia with an obligatory concurrent sterility. This was followed by devitalized and morphologically abnormal spermatozoa which probably resulted from abnormal spermatogenesis.

(4) Sexual excess decreased the volume of semen and number of spermatozoa. The spermicidal time and aging time remained at a fertilizing level.

(5) The affect of some other environmental factors was noted.

REFERENCES

1. Brown, Royal L.; and Gamble, Clarence J.: A Method of Testing the Relative Spermicidal Affectiveness of Contraceptives and Its Application to Ten Commercial Products. Human Fertility, **5**:97-108 (Aug.) 1940.
2. Brown, Royal L.; and Gamble, Clarence J.: The Comparative Spermicidal Powers of Fifteen Commercial Contraceptives. Human Fertility, **6**:1-6 (Feb.) 1941.
3. Brown, Royal L.; and Gamble, Clarence J.: Factors Influencing the Determination of Spermicidal Times of Contraceptive Materials: Further Comparisons of Spermicidal Times of Commercial Contraceptive Jellies and Creams. Human Fertility (In Press).
4. Brown, Royal L.; and Gamble, Clarence J.: Factors Influencing the Survival Time of Human Spermatozoa in a Solution of Potassium Acid Phthalate. Human Fertility (In Press).
5. Brown, Royal L.: Rate of Transport of Spermia in Human Uterus and Tubes. Amer. Jour. Obst. & Gynec. (In Press).
6. Brown, Royal L.: Spermia Transport in Man. Jour. of Urology (In Press).
7. Hammond, J.: The Effect of Temperature on Survival *In Vitro* of Rabbit Spermatozoa Obtained from the Vagina. Jour. Exper. Biol., **7**:175, 1930.
8. Mills, R. G.: The Pathological Changes in the Testes in Epidemic Pneumonia. Jour. Exper. Med., **30**:505, 1919.

VARIATION AND INTERPRETATION OF GLUCOSE TOLERANCE TEST*

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The glucose tolerance (GT) test offers the best means for the diagnosis of diabetes mellitus, especially of the early cases and in the differentiation of a diabetic from a non-diabetic glycosuria. Let us review briefly the salient features of the test.

How much glucose should be used for this test? Shall it be 100 gm. for an adult, regardless of his weight, or shall it be 1.85 gm. per Kg. body weight?

I have always used 100 gm. for adults. The 1.85 gm. per Kg. body weight sounds more scientific, but is it? Let me demonstrate by example: two patients present themselves for this test; they are of the same age, same height; one weighs 116, the other 232 pounds. The first is slightly below average weight for his height, the second excessively obese. What does the obesity represent? Fat and water. Neither of these enters into the problem of a carbohydrate metabolism of the body. The first case thus would get 98 gm. glucose (116 lbs. = 53 Kg. x 1.85 = 98 gm.) the second case 194.25 gm. (232 lbs. = 105 Kg. x 1.85 = 194.25 gm.) of glucose, thus twice as much as the first. Still, in both bodies we have the same quantity of muscular and organic tissue, since the excess is merely fat and water and does not concern us in performing the test. Will we get the same answer if we do two tolerance tests in one of the individuals about a week apart, one with 98 gm. and the other with 194 gm.? I doubt very much that the answer would be the same, as *Chart 1* indicates where the first test was performed with 50 gm., the second with 100 gm. of glucose. If we were to double the 100 gm. and do a third test with 200 gm. glucose, we would likely get a third type of curve, provided the patient would stand so much glucose concentration in the stomach and not vomit it.

It is true that we are not frequently confronted with patients who evidence such extremes of body weight, consequently the amount of glucose administered in the test would vary only slightly, averaging 90-110 gm. Whether 90 or 110 gm. are given the curve will not be altered. Thus it is much simpler, much more expedient to maintain a standard dose of glucose of 100 gm. for all patients as is done in various renal and other function tests in which we are more concerned with the specific organ involved, regardless of the weight of the individual. In this test the insulogenic function of the pancreas is being determined and it does not matter to that organ whether the body has 50 or 150 pounds of fat enveloping it. Thus, based upon this reasoning, what was intended to be a scientific dose (1.85 gm./Kg.) is anything but scientific the moment we run into obesity of any type. For these reasons I routinely give 100 gm. dose for adults.

There are several pitfalls one should try to

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avoid, pitfalls that alter the curve and give us false information.

(1) Anyone who has been on any freak diet (reducing diet, high fat, low carbohydrate diet, high protein diet, etc.) will likely give an abnormal GT curve on the diabetic side which will return to normal if the patient is put back on normal diet for a week.

(2) Anyone who has been very ill and unable to eat for one reason or another may give a false curve.

(3) Anyone with an acute infection may give a false curve.

(4) Anyone with a marked nervous upset may give a false curve during that period.

These are a few instances one should bear in mind and avoid such false information and useless tests if performed for clinical information. A GT test should always be done while a patient is living under normal conditions, eating normally, without any special preparation. Only then do we consider such a test performed under normal standards and giving us the proper information.

Now let us analyze a series of GT curves such as we are likely to obtain and five of which are presented in *Chart 2*.

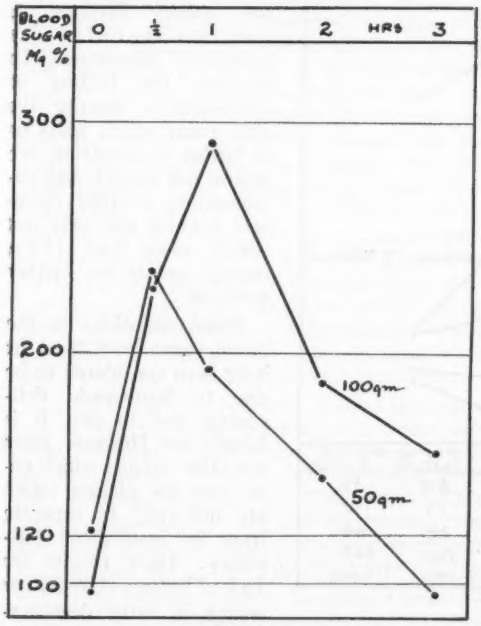


Chart 1

Two glucose tolerance tests done on the same soldier using 50 gm. of glucose in one and 100 gm. in the second test.

Curve 1 represents a normal curve, such as we get in a normal individual whose insulogenic function is intact. Fasting blood sugar is normal; there is a quick rise following the glucose intake and a quick return of the blood sugar to normal. Here the blood stream is flooded with sugar only for a period of about 1¼ hours. It is the duration of flooding of the blood stream with glucose which is the important point in the interpretation of such curves, not the height of any single blood sugar which depends largely on the rapidity of absorption of glucose from the gastro-intestinal tract.

Curve 2 also starts with a normal fasting blood sugar. It rises higher than Curve 1 and the flooding of the blood stream is prolonged in this case, lasting almost 2½ hours. Here we see a lag in the insulogenic function.

Curve 3 also starts with a normal fasting blood sugar, but the picture is more accentuated. Here the blood stream is flooded with sugar for four hours. No longer can the insulogenic function cope with its task, even though, after many hours of rest at night and no food since supper, the blood sugar manages to return to normal by morning.

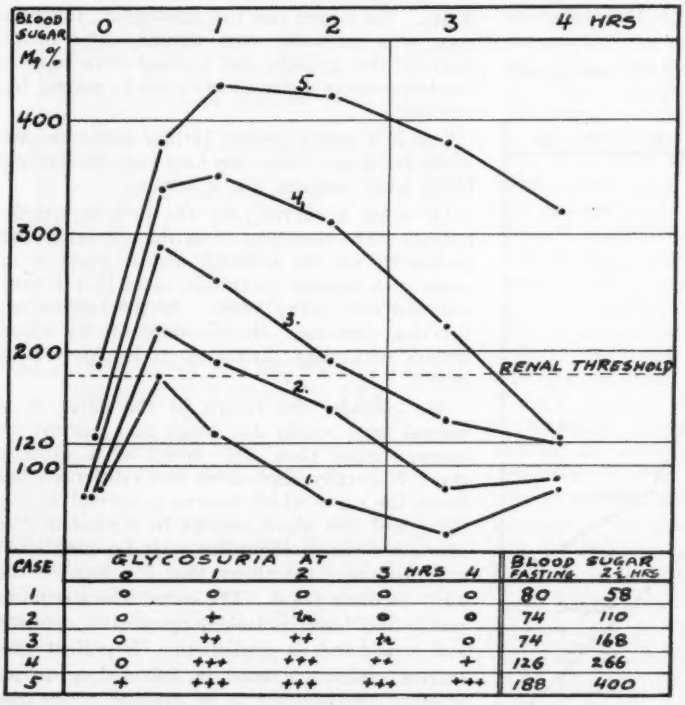
Curves 4 and 5 present further accentuations of the previous. Note that here even the fasting blood sugar remains above normal.

Of these 5 curves only the first is strictly normal. The transition from the normal to the pathologic can be followed and it happens in some such manner as this in cases that I have followed over many years. As the insulogenic function decreases, the flooding of the blood stream with sugar increases in height and in length.

We consider the return of the curve to a normal level within 2½ hours as a normal response: more than 2½ hours as a diabetic curve. Naturally, there is not much difference between the curve which returns to normal in 2¼ hours and one which returns to normal in 2¾ hours, but the dividing line must be established and experience has shown that 2½ hours is the most accurate point. The curve which requires nearly 2½ hours is looked upon with suspicion and considered as prediabetic. A patient presenting such curve must be followed up to see whether improvement or progression of the diabetic tendency results. According to this viewpoint, *Case 1* is normal, *2* is prediabetic, *3, 4* and *5* are diabetic. These cases also emphasize

the value of 2½ hour blood sugar. The first three curves all presented normal fasting blood sugars; yet Curve 1 was normal, 2 a prediabetic, 3 a diabetic. If the interpretation of the state is based upon the fasting blood sugar values only, the error would be 66 per cent. Even the fasting blood sugar of Curve 4 is just slightly above normal, such as would be accepted as normal and disregarded. Now let us take the 2½ hour blood sugar values on these four curves: No. 1 is 58; No. 2 is 110; No. 3 is 168; No. 4 is 266. Consequently, if we had the 2½ hour values, the interpretation would not have been missed as it was by considering the fasting value alone. Therefore, the fasting blood sugar is not so informative as the 2½ hour figure. One can go a step further and eliminate the GT test and substitute an easier way of getting the same information. The patient can be given a heavy carbohydrate breakfast and the blood sugar checked at 2½ hours. It should be estimated from the time the patient began to eat. This will give the desired information and it is infinitely more pleasant, less time consuming and less costly.

There is another question to be considered, namely, that of glycosuria. This depends upon the renal threshold and has very little to do with the problem of diabetes. It can be a diabetic glycosuria or it can be a non-diabetic glycosuria. This differentiation can never be made from extensive studies upon glycosuria alone, but from blood sugar studies. *Chart 2* indicates the height of the renal threshold at 180 mg. per cent, which is the generally accepted level. This is not altogether true, as it varies in each individual. The first case would show no glycosuria, as the height of blood sugar has at no point gone above the 180 mg. threshold value. However, cases are seen with just such a curve as this and definite glycosuria in each specimen of urine. The glycosuria alone is not much help to us in settling the problem. The rest of the curves will show glycosuria each time the blood sugar values are above the renal threshold value. They are interesting as findings, but of no practical value. If we have the blood sugar figures, we can completely dispense with the urinary findings, as these are merely of a secondary importance. In practice, the finding of glycosuria is usually the first point which leads us to further investigation. We should not neglect such examinations as they represent a quick and easy test which, when positive, merely points to further work-up.



CASE	GLYCOSURIA AT 0	1	2	3 HRS	4	BLOOD SUGAR FASTING	2½ HRS
1	0	0	0	0	0	80	58
2	0	+	tr	0	0	74	110
3	0	++	++	tr	0	74	168
4	0	+++	+++	++	+	126	266
5	+	+++	+++	+++	+++	188	400

Chart 2

The variations in response to 100 gm. glucose orally of the blood sugar level in various individuals, the response being from strictly normal to a severe diabetic curve. Also the variations of glycosuria accompanying these curves at a constant renal threshold level.

These variations in the blood sugar level thus far have been considered to be due to insulogenic deficiency, and to that it is largely due. However, there are other factors which enter into the picture which are not easy to separate from the insulogenic deficiency. These factors are lack of hepatic glycogen, as occurs in fatty degeneration of the liver, ketosis, hyperthyroidism and fever.

For that very reason, caution should be exercised in the interpretation of glucose tolerance curves and opinion should be reserved until more conclusive evidence is found.

Let us consider first of all the question of liver storage of glycogen which is a normal physiologic process, but which can function only in the presence of an adequate supply of insulin. Further, it is known that the storage can be interfered with in the presence of adequate insulin if the action of insulin is inhibited in some manner as it is in ketosis, fever and hyperthyroidism. This also applies in the condition of fatty infiltration of the liver. There is a definite inhibition of storage of glycogen in these conditions, consequently hyperglycemia results. How about a state of affairs in which the liver cell is temporarily damaged and for that reason cannot store glycogen? It sounds reasonable that this could and does happen, and one can go further and ask: after recovery, will the liver be able to store glucose in a normal manner?

This question arises also in some cases of acute hyperthyroidism in which we find glycogen-poor or glycogen-free liver due to hepatitis. After operation this hyperglycemia subsides in all but 2.8 per cent who remain diabetic. Here then something must have happened to the islands of Langerhans. Was it the prolonged toxemia present or the marked increase in the ingestion of food during the acute stage of hyperthyroidism? Were we by any chance dealing with what the Germans call *Minderwertigkeit* of the islands? This last point is difficult to answer and yet herein lies the key to the problem. Do only those patients break down during infection or ketosis who have an inadequate insulogenic reserve or can even those who have a good reserve become diabetic? As a rule we do not see these patients in the pre-state. We see them first when the actual pathologic condition which brings about the hyperglycemia has developed and thus one can only theorize. Here we need basic work over a period of decades to furnish the answer.

To illustrate the problem of liver damage a case of acute catarrhal jaundice, quite severe and quite persistent in a soldier 50 years of age which followed 6 months after the yellow fever immunization, is presented. Otherwise his history is non-contributory and his physical examination is negative with the exception of moderate obesity and a palpable liver. He was admitted to Lawson General Hospital August 29, 1942, with no symptoms except deep jaundice. His carbohydrate metabolism studies are shown graphically in *Chart 3*. These consist of repeated glucose tolerance tests over a three-hour period and repeated blood sugar studies taken three times a day before meals. His first curve was frankly diabetic and the first blood sugars taken three times a day before meals were all high. These, however, began to drop quickly toward the normal level, but not the GT-2, GT-3. On October 13, the three blood sugars were normal and the GT done the following day dropped considerably, almost to a normal level. At this point it was concluded that the preceding rise of blood sugar might have been due to parenchymal liver damage and secondary inability to store glycogen. The galactose tolerance tests cleared and the hyperglycemia, too, began to clear up. That appeared reasonable. However, when the GT test (GT-5) was repeated a week later the level of the curve had risen. The fasting blood sugar was 145 mg. per cent. The liver was no longer palpable, but the jaundice persisted. It was felt at this point that we were no longer dealing with a damaged liver cell alone, but also with damaged cells in the islands of Langerhans and subsequently insulin insufficiency. On the basis of this hypothesis the patient was put on insulin units 10-10-10 for ten days, changing this to 25 units of protamine zinc insulin on November 1. On November 13, all insulin was discontinued. The chart shows what happened: a thorough control of hyperglycemia even after insulin was discontinued and a return of the glucose tolerance test (GT-6) to normal. Did the twenty days of insulin bring about the restitution of the insulogenic function? One would think so, but how about GT-4, which is virtually the same as GT-6? Those are some of the problems which are difficult to answer.

On the whole we can consider that the carbohydrate metabolism upset in this case was due to the damaged liver cells with a later superposition of island cell damage causing a deficiency of insulin. At any rate this shows how necessary is the follow-up until the condition has cleared. One can only speculate as to what would have happened had we not instituted insulin at the time this was done. Would this upset have progressed to a true diabetes? It is quite possible for it has been observed in cases of hyperthyroidism in whom mild hyperglycemia was disregarded, and in a few weeks the patient became a permanent frank diabetic. Had we stopped with the GT-6 on November 30, 1942, we would have felt quite at ease, feeling that we were dealing here largely with damaged liver cells, unable to store glycogen, thus bringing about a hyperglycemia which, when it had lasted

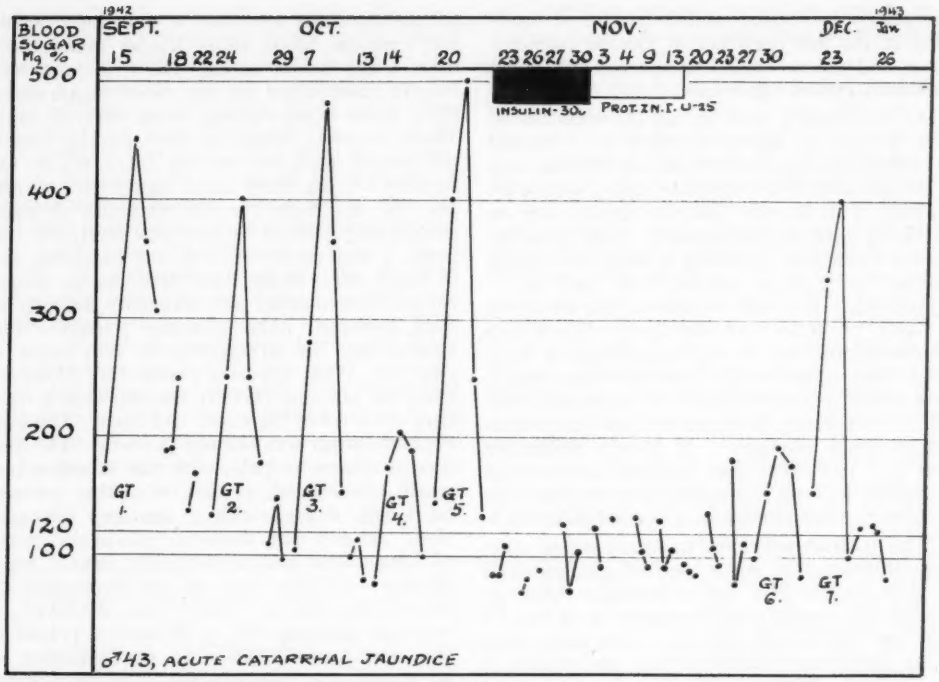


Chart 3

The follow-up by blood sugar and glucose tolerance studies in a soldier with acute catarrhal jaundice over a period of 4½ months.

long enough, damaged the island cells. They, through the control of hyperglycemia by the use of insulin for three weeks, again recovered and resumed their function as the GT-6 seems to indicate. The patient was discharged at this point as he belonged to the local command so that we could still watch him. On December 23, 1942, nearly a month after the GT-6, we repeated the test; and note the answer we got in GT-7. Again a frank diabetic curve, where even the fasting blood sugar is above normal, namely, 154 mg. per cent; and 33 days later he was rechecked three times a day before meals with the following result: 130-125-83. Can we say at this stage that we are dealing with a disturbed carbohydrate metabolism due to damaged liver cells or are we now dealing with an early frank case of diabetes mellitus? I fear that we will have to classify him in the latter category and treat him as a diabetic until such time that we can prove the contrary. This case, I feel, presents some of the difficulties one encounters in this field. It shows that no single test tells the whole story, but that a prolonged observation is needed to settle the problem.

As a general rule, when a patient is on a low caloric diet when a GT test is made, the resultant curve is apt to be diabetic in type. When that same patient is placed on a normal diet for a week or so and then the GT repeated, the second curve is apt to be normal.

In *Chart 4* I have drawn 3 GT curves on the same individual done three and two days apart. The individual was obese and was on a low caloric diet. One would thus expect a continued high curve. The GT on September 12, 1942, showed just a borderline case. The GT on September 15, 1942, three days later, shows a much higher and prolonged curve, as does the subsequent test two days later. One would not expect that much change in the curves in five days. I cannot offer any further opinion as the patient was discharged from the service. There was no history of diabetes in the family. The patient was obese and had once, in June, 1940, before he was admitted to this hospital, a fasting blood sugar of 200 mg. per cent. This finding, together with the obesity and with these GT tests, in two of which even his fasting blood sugar

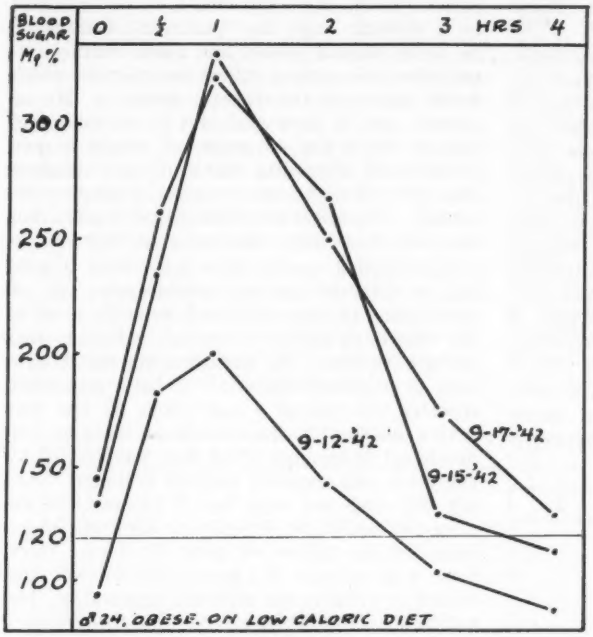


Chart 4

Usual variations of the glucose tolerance curve in a patient on a low caloric diet.

values are above normal, are all points against him.

No set of rules holds absolutely in medicine. These are just guides for one to follow and one must be ever on the alert for exceptions, as this case represents, to general rules. It is for this reason that a prolonged observation offers a much more definite answer than a single observation no matter how well executed.

A point in question is cited earlier in this article, namely, that a GT test should be done while a patient is eating normally. An abnormal type of curve (diabetic curve) may result if that same patient has been on a low caloric diet or some other abnormal diet. This point has been well established by many observers. However, there are exceptions even to this. Note *Chart 5* which shows two GT tests done on the same individual. The first test was done while the patient was on a low caloric diet because of obesity (August 5, 1942). The fasting blood sugar in this test was normal, but the configuration of the curve was abnormal, mildly diabetic. At this point, I felt that this abnormal rise and prolongation of the curve was artificial, namely, due to the fact that the patient was on a low caloric diet. Thus the patient was placed on a normal diet and the test repeated in ten days, at which time I was fully expecting a rectification of the curve. This did not happen and the curve was higher than the first and even the fasting blood sugar was elevated. This patient, despite the abnormal curves, carried a normal blood sugar morning, noon and night (three times a day before meals) and a subsequent GT done two weeks later was nearly normal. He was observed and checked closely for over six weeks and returned to duty. The question concerning this patient is what will happen to him in the future? Since he has once shown an unstable curve, is he more likely to break down again if he gets some severe infection or some other systemic insult? Only time will reveal the answer.

In *Chart 6* we can see quite a contradictory picture. The first two GT curves were done at a four day interval while an obese patient was on a low caloric (800 calorie) diet. These curves show a slight elevation. Next, the patient was placed on a house diet and the GT repeated 1½ months later with a resultant frank diabetic curve. Consider the second half of the chart. A psychoneurotic patient who, too, was on a low caloric diet, evinced at that time a frank diabetic curve in which even the fasting blood sugar was above normal. When this same patient was placed on a house diet, the subsequent GT done 23 days later showed a marked drop to nearly a normal level.

It is hard to reconcile such opposite results in patients. The second case responds as expected, but in the first case we see just the opposite.

It is true[1] that the incidence of a diabetic type of curve in the obese is much higher than in any other condition. Since we find this type of curve in the obese one naturally asks the question: does this mean diabetes? Does it indicate a lessened insulogenic function? These are questions of prime importance and unfortunately the opinions on this point vary. I insist that it does mean a lessened insulogenic

function and Newburgh,[2] for example, insists that it does not.

I wish to offer some data to support my thesis. Newburgh, in his recent publication, offered his. Time alone will settle which of the two lines of reasoning is correct. Newburgh[2] considers the hyperglycemia found in obesity as one of a fundamentally different nature from hyperglycemia of diabetes mellitus and he gives the following reasons: 1. The disturbance is mild, often so mild that it may exist for many years without causing symptoms even though it is not treated. Clinical acidosis does not occur. 2. Delayed utilization of glucose is a common accompaniment of obesity. He states further that the hyperglycemia of obesity is not due to diabetes. As an argument for that thesis he introduces the point that were these patients diabetic and obese, weight reduction would not cure the hyperglycemia. If the hyperglycemia is to be explained on a diabetic basis the "pancreatic weakness," he states, should persist and again manifest itself when this patient suffers an infection which would aggravate the diabetic tendency. He reports a case to show that this is not true, and one in which the reduction of weight caused cessation of glycosuria which did not reappear after the onset of a severe upper respiratory infection. He offers no blood sugar studies, but mentions that "the urine was sugar-free."

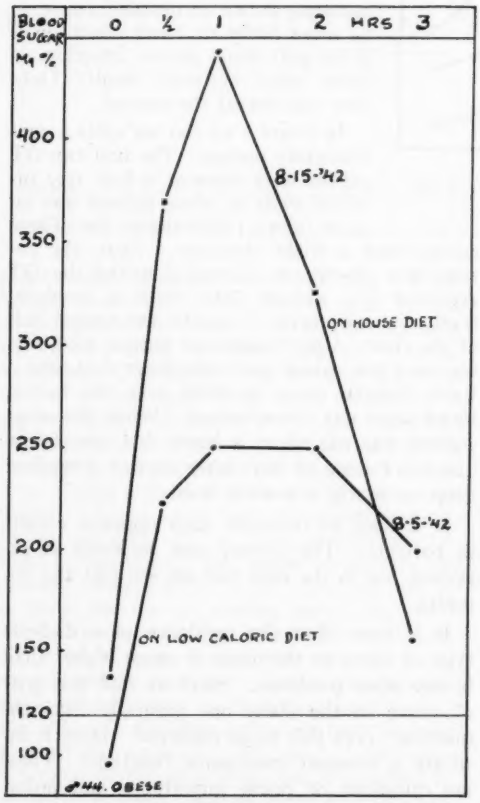


Chart 5

The variations of glucose tolerance curve in a mild diabetic when placed on a house diet in the interim of the two tests.

An infection usually does upset even a mild case of diabetes[3] and one would expect the reappearance of glycosuria and hyperglycemia in the case cited above. However, infection does not always upset the carbohydrate metabolism even in a proved diabetic.[3] I have previously reported the case of a man about 60 who was taking insulin for the control of diabetes and developed pneumonia which was complicated by empyema and required surgical drainage. During this stage not only was it necessary to reduce the insulin but actually to eliminate all insulin for the course of some 10 days. Here, then, is an example of a severe infection not only failing to produce the expected aggravation, but exhibiting the opposite effect. For that reason I feel that it is dangerous to stake a claim on one case of former obesity as not returning to the diabetic state when an infection occurred. On the other hand, I have seen severe exacerbations of mild diabetes mellitus in the presence of mild infections and I have seen obesity patients with hyperglycemia return to normal with the loss of weight and again reappear when later dietary routine was disregarded.[4]

Newburgh brings out one further point (page 941). He reports a juvenile severe diabetic in whom the question of supposed deleterious influence of gain in weight is emphasized. He describes two glucose tolerance tests 4 months apart. In the meantime the patient gained 31 pounds in weight. Preceding each test she was placed on a liberal diet and no insulin was given for 5 days. I have formulated a graph of these two tests (*Chart 7*). He concludes: "A gain of 31 pounds did not lessen her ability to dispose of glucose." It is hard to see how he came to this conclusion. The 24-hour urine-sugar output is virtually the same. The glucose tolerance test is definitely worse in the second test. In the first test the descent of the curve starts at the second hour. In the second test the curve is still rising at the third hour, and had the test been carried on one more hour, he might have seen a still further rise in the curve. It could

hardly be said that her condition was not aggravated.

His argument that the hyperglycemia of obesity is not due to an insulogenic deficiency, but to an increased metabolism of the obese falls down in his statement: "It is also conceivable that the prolonged hyperglycemia caused organic changes in the islands of Langerhans, since Best[5] has shown that high blood sugars do damage the insular cells in dogs." That is the kernel of the whole problem and it was clearly shown a quarter of a century ago by F. M. Allen in his extensive researches on this point. The latest evidence comes from the careful work of Lukens and Dohan,[6] who showed clearly that destruction of the islands of Langerhans occurs in chronic hyperglycemia.

Here is the key to the problem. Hyperglycemia destroys the islands. Does it make any difference whether such hyperglycemia appears in the diabetic, the obese, the hyperthyroid, in some other endocrine disturbance, or as a result of some infection? The end result of a sustained hyperglycemia is the same in all, a true diabetic state. It is for this reason that hyperglycemia, of whatever cause, should not be disregarded. It should be controlled before it is too late. Hyperglycemia in time causes an irreversible change in the islands, sooner in some patients, later in others and when this change occurs, it is too late to save the patient from diabetes mellitus. Preventive medicine in this field is a new duty the endocrinologist must assume.

If it is true that by a low carbohydrate diet

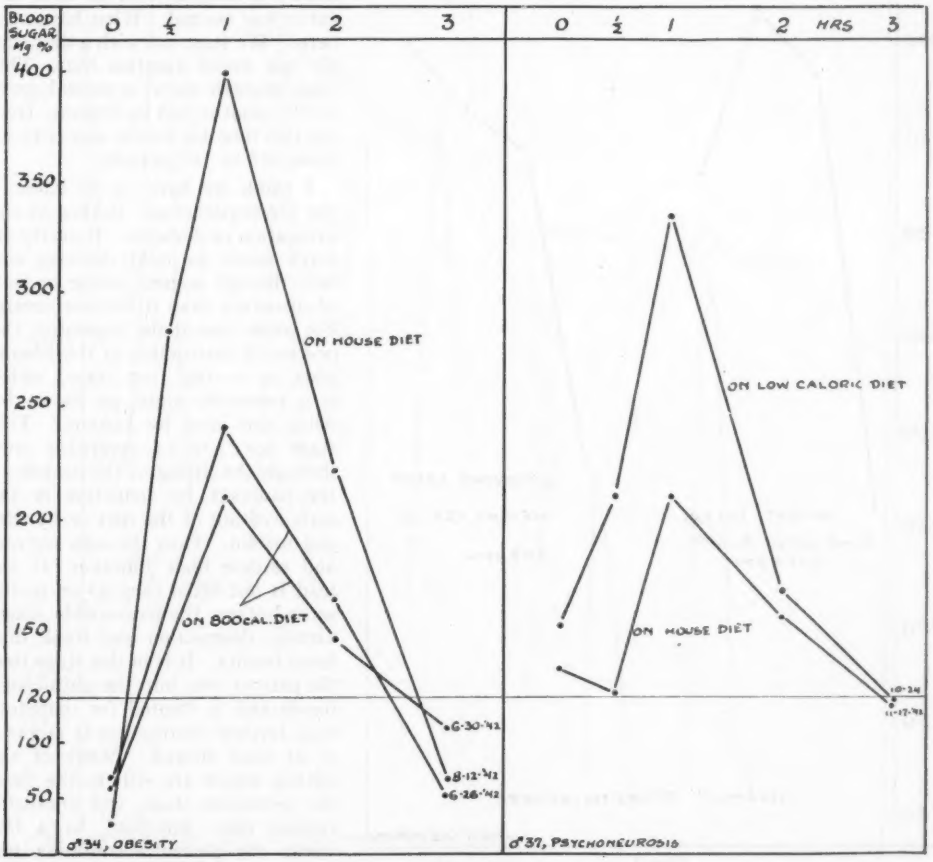


Chart 6

Comparative studies on two patients who show just the opposite response on the same routine.

we can straighten out an upset of carbohydrate metabolism in obesity, and if it is true, that such a state is not a diabetic state, it must be granted that any early true diabetic who straightened out on a low carbohydrate diet and maintains a normal blood sugar level as long as he stays on such a low diet is not really diabetic even though hyperglycemia returns if the diet is abandoned. That even a frank, early diabetic's glucose tolerance curve, which at the beginning is definitely diabetic, can, on a reduced diet, become normal is seen in *Chart 8*. This is a case of a young Army physician, who accidentally discovered glycosuria. The pertinent points of his history are as follows: He is 33 years old, Jewish, and is obese (197 pounds, 67½ inches tall). He has a heavy diabetic history in the family (maternal grandmother, maternal uncle, 3 maternal aunts, numerous cousins). The chart shows 5 glucose tolerance tests. In the first even the fasting blood sugar started at 205 and rose to 480 mg. per cent. The second test done three days later confirmed the first. Subsequently he went on a rigid diet on which the three blood sugars taken three times a day before each meal were at first above normal, later normal. The third GT test was done five weeks later and the curve was still diabetic. From November 30, 1942, he stayed on a reduced diet, but not a rigid diet. He was eating at the officers' mess. When the fourth GT was done 2½ months from the first, the curve was normal. What happened here? We start out with a diabetic. No one would question that. This same diabetic shows a normal curve in 2½ months just by dieting. During this time his weight was reduced from 192 to 160 pounds.

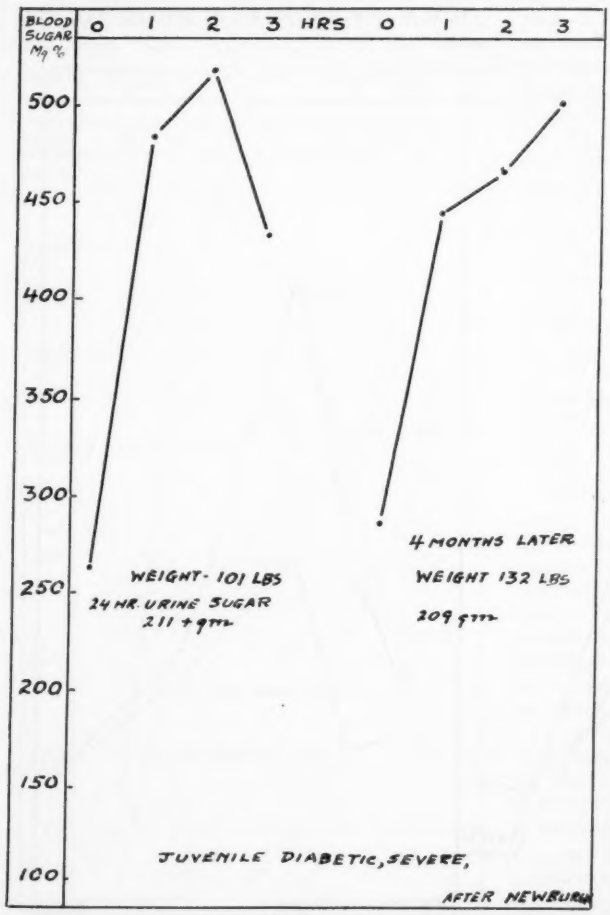


Chart 7

A graphic of two glucose tolerance tests constructed for Newburgh's data on a juvenile diabetic showing the effect of increase in weight.

I think we have to go back to the physiopathologic studies in the evaluation of diabetes. It nearly always starts as mild diabetes and only through neglect, abuse or lack of discovery does it become severe. For some time at the beginning, the process of destruction of the islands goes on to the first stage, which is a reversible state, as shown by Allen and later by Lukens.[6] This stage becomes reversible only through the lifting of the load from the pancreas, by reduction in the carbohydrate of the diet or by diet and insulin. Thus the cells recover and resume their function. If the load is not lifted they go on to the second stage, the irreversible stage, namely, destruction and frank diabetes results. It is in this stage that the patient gets into the physician's hands and is treated for diabetes; thus further destruction is stopped or at least slowed. Many of the islands which are still in the first, the reversible stage, will gradually resume their function. In a few weeks the patient's condition improves and the insulin can be reduced, perhaps eliminated.

The weakness of much of our knowledge lies in the fact that we do not know the whole story and that we have not followed our studies far enough. For example, the question of history of diabetes in the family. How frequently the patient errs in this bit of information, not

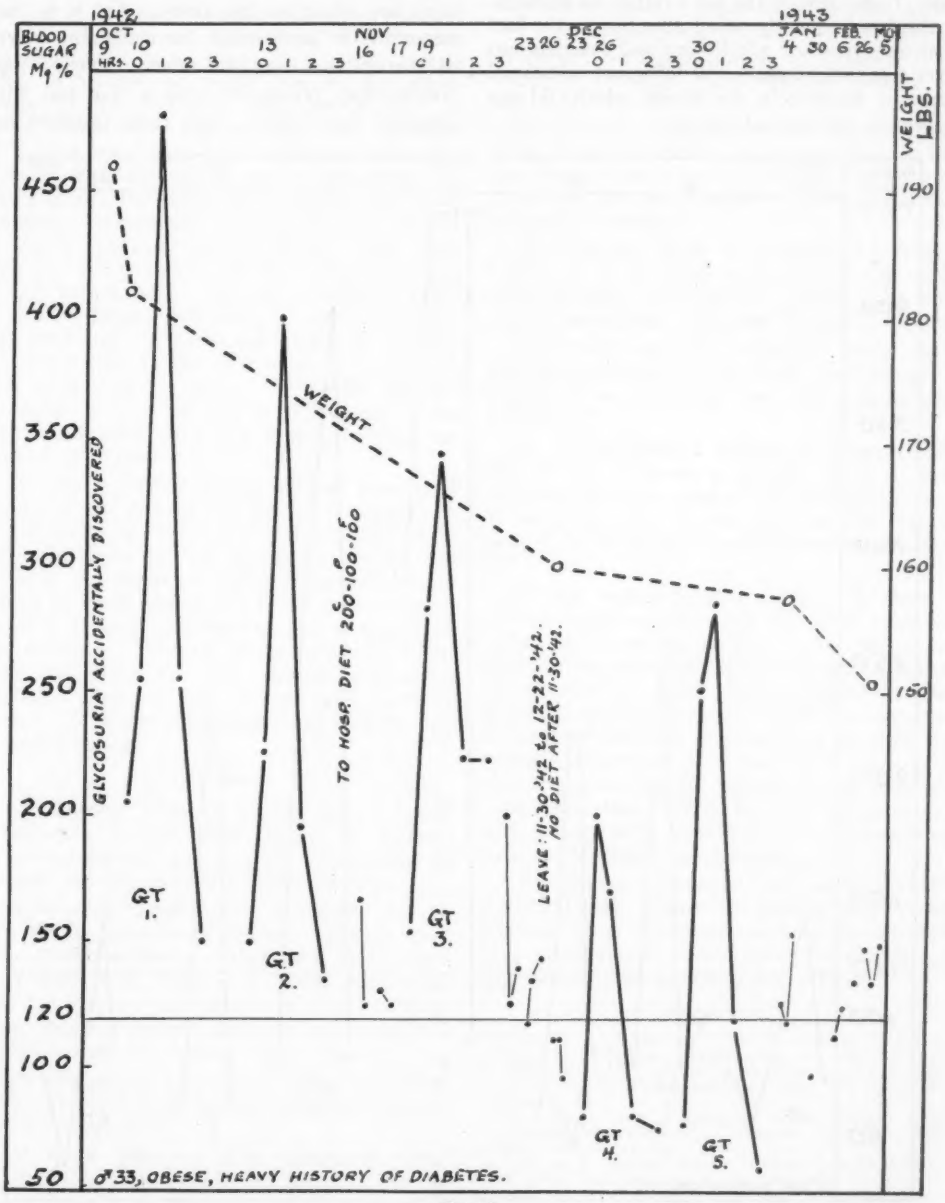


Chart 8

A follow-up of an early case of an obese diabetic showing the marked improvement of his condition by the mere reduction of weight.

willingly, of course, but unknowingly. I recall a diabetic boy, 4 years of age, who gave no clue to diabetes in the family and yet, 4 months later, I was treating the boy's father for diabetes. Joslin has frequently called attention to the fact that only repeated questioning and examinations over a period of years will bring out additional cases of diabetes in the family which did not appear in the original history.

There is the question of weight. The present weight of the patient may be 10 pounds above his normal weight. Frequently no further questions are asked on this point. Yet it is very important to know what the maximum weight of that patient was and when. Even a past obesity may present us with a clue and with penalties that follow. And, these penalties are

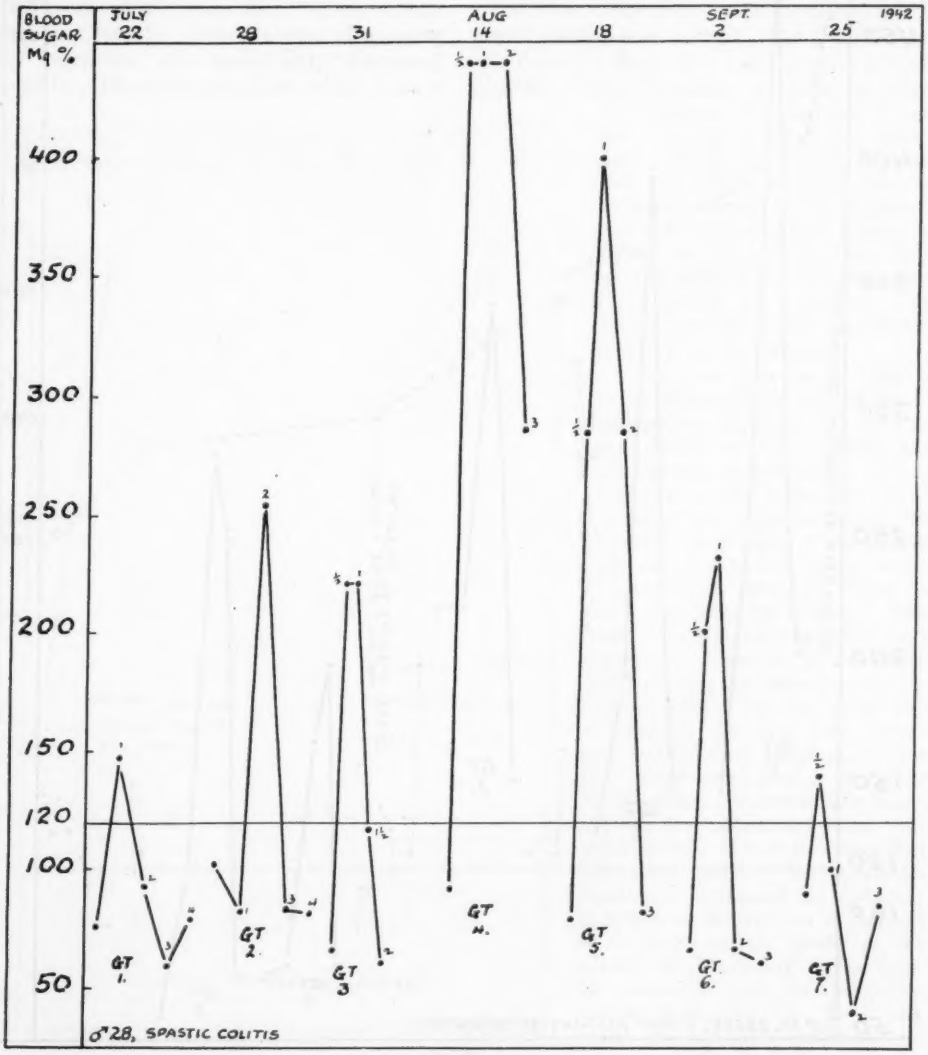


Chart 9

A series of glucose tolerance studies upon one individual, showing a sudden disturbance of carbohydrate metabolism which came on and quickly disappeared without any ascertainable cause.

not a peculiar type of hyperglycemia due to obesity, but a true diabetes.

Chart 9 presents a series of GT tests, seven in all, on a 28-year-old soldier who, in 1940, had a severe diarrhea and lost weight. This diarrhea persisted until the middle of 1941. It was largely due to his loss of weight that he was transferred to this hospital. Upon arrival May 24, 1942, the diarrhea was not a problem. All these GT tests were done here under the same conditions, while the patient was on no special diet. At a glance the thing which strikes one is the sudden, abnormal rise of the GT curve in GT 4 and 5. They are frankly diabetic. Still, there was no clue to this in the preceding three tests which were normal. The rise in Curves 2 and 3 was a bit higher than what we see usually, but the return of the curve was quick so that the hyperglycemia in the first three tests did not last more than 1½ hours. As sudden and unexpected as was the rise in GT 4 and 5, the subsequent two tests, GT 6 and 7, again returned to normal.

We have a sudden upsurge of blood sugar level after 100 gm. glucose like that in a diabetic. It lasted about two weeks and again subsided without medication or any change in his routine, without any apparent evidence on the basis of which we could explain it. I have seen a similar upset in diabetics[1] in whom we deal with periodic exacerbations. However, in such diabetics it follows some cause, the most common being an infection. Here we had no apparent causative factor. It came and disappeared without any apparent reason.

SUMMARY

(1) Glucose tolerance studies offer valuable information in the differentiation of diabetic from non-diabetic glycosurias. They help to confirm the diagnosis of diabetes mellitus.

(2) Fasting blood sugars, if normal, do not rule out the question of diabetes. If high, they offer definite evidence on this point. A 2½-hour after-meal blood sugar is infinitely more valuable for a diagnostic purpose and will confirm many positive diagnoses which are missed by merely taking the fasting blood sugar.

(3) Glycosuria is merely a sign, not a diagnosis. It can be a diabetic glycosuria or a non-diabetic glycosuria.

(4) While there are other factors at work, the diminished insulogenic function is by far the largest factor in the production of hyperglycemia. On the other hand, the insulogenic function (secretion) may be normal, but the action of insulin blocked, in which case hyperglycemia will result. The commonest "blocking" factor is ketosis in its various forms. The inability of the liver to store glycogen is yet another factor.

(5) Hyperglycemia in obesity is basically no different from hyperglycemia of diabetes. If allowed to continue, frank diabetes mellitus results. If checked by diet and reduction in weight marked improvement results. This improvement is no better and differs in no way from the improvement seen in early diabetics who are kept on a rigid diet for a period of time, or if obese, reduced in weight.

(6) The end result of a sustained hyperglycemia, be it of whatever source, is the same, frank diabetes. The medical problem is to combat hyperglycemia whatever its source may be.

(7) There can be considerable variation in the conformity of a GT curve even though a patient is on a constant low carbohydrate diet (*Chart 4*).

(8) A non-diabetic patient on a low caloric diet is apt to show a diabetic curve if suddenly subjected to a heavy load of glucose per os. If he is put on a normal diet and the GT repeated, he is likely to respond with a normal GT curve.

(9) An early obese diabetic will show a similar improvement in his GT curve with the reduction of weight as one where we might question the diagnosis of diabetes and say that he is merely obese, showing hyperglycemia. Basically there is no difference between the two. If they go back on unlimited eating after the primary straightening out, they both wind up in the same final status, namely, frank diabetes. Prolonged uncontrolled hyperglycemia carries with it its penalty, namely, the eventual destruction of the islands of Langerhans.

(10) Diabetic patients meet with periodic exacerbations. These are usually due to infection. *Chart 9* presents such an exacerbation in a non-diabetic. The reason for this is not apparent and no explanation is offered.

REFERENCES

1. John, H. J.: A Summary of the Findings in 110 Glucose Tolerance Estimations. Endocrinology, **13**:388, 1929.
2. Newburgh, L. H.: Control of the Hyperglycemia of Obese "Diabetics" by Weight Reduction. Ann. Int. Med., **17**: 935-942. 1942.
3. John, H. J.: Some Interesting and Obscure Problems in the Diagnosis and Treatment of Diabetes. Ohio State Med. Jour., **33**:741-748, 1937.
4. John, H. J.: Repeated Glucose Tolerance Tests in Children. The Jour. Ped. (Case 16), **14**:737-744, 1939.
5. Haist, R. E.; Campbell, J.; and Best, C. H.: Prevention of Diabetes. New England Jour. Med., **223**:607, 1940.
6. Lukens, F. D. W.; and Dohan, F. C.: Pituitary Diabetes in the Cat: Recovery Following Insulin or Dietary Treatment. Endocrinology, **30**:175-202. 1942.

MALARIAL IMMUNITY*

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In discussing a subject about which there has been so much controversy it is wise to begin with a definition. In Dorland's Dictionary, immunity is defined as "security against any particular disease; the power which a living organism possesses to resist and overcome infection."

From the above definition it would appear that immunity covers any action of the body by means of the body fluids or the cellular construction which resists infection. The term is all embracing and such additional terms as "premunition" or "tolerance" appear to be unnecessary and superfluous. It is true that complete immunity, such as that obtained by smallpox vaccination or antityphoid inoculation, is seldom encountered. No one as yet has produced a serum or vaccine whose use can protect the body from the ravages of the malarial plasmodia, but immunity against malaria of varying degree is possessed by many and its existence has prevented the depopulation of large areas in the world.

Malarial immunity is racial, familial or acquired. In the Southern states of the United States the Negro population has a decided immunity to *P. vivax* infection. In a very careful survey of school children of a number of counties of Georgia in 1937 it was found that though Negro children showed a higher percentage of infected individuals, 7.5 per cent in contradistinction to 1.4 per cent infected white children, 18.6 per cent of those infected had *P. vivax* parasites, while 78 per cent had *P. falciparum* infection. Among the white children 57.2 per cent had *P. vivax* infection and 35.7 per cent *P. falciparum* infection. This is not an isolated observation. Throughout the endemic regions where careful studies are made these figures are approximated. Among adult Negroes the disparity between the percentages of infection of the two parasites is much greater.

This racial immunity was further proven by the fact that in using malarial inoculations for the treatment of paresis, mosquitoes infected with *P. vivax* on biting Negroes failed to infect them in most cases even though a large number of mosquitoes were used in single cases. At the same time there was no difficulty experienced in infecting white subjects.

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The racial characteristics have been noted in other countries, but not so marked as in the United States where two so different races live along side each other. In other countries where immunity is observed it is noted mostly in the resident race where it is usually acquired. Other races which dwell therein most frequently have been born and reared in other countries, so it would be very difficult to prove any recent immunity.

Of course there might be a racial immunity among the Negroes as suggested above, but in some Asiatic countries where Negroes are not present the same apparent racial immunity is seen among the yellow races whose economic condition is low and who have always been exposed to malarial infection. This apparent racial immunity has also been seen by Ciuca among the poorer Rumanian peasants who are Caucasians and live under similar conditions.[1 2 12]

Familial immunity does not rest upon a very firm foundation of fact. A large number of qualified observers have spoken of such a type, but one can readily perceive that a familial resistance could not be proven unless carefully recorded observations reaching back for several generations were available. It is like the question of heredity in psychotic affections. a good subject for argument but a very poor one for proof: like a good many theories in the world of medicine, possible but not probable.

Acquired immunity becomes a very important factor in hyperendemic areas. If it were not for this immunity malaria would depopulate many sections of Africa and Asia. Such results of malarial infection caused the depopulation of Epirus in Greece and the Campagna in Italy. The existence of this acquired immunity in the adult population permits continuous labor by natives who are inured to climatic conditions, and thus prevents plantations and other improvements lapsing into jungle.

For a long time this immunity was not understood, because frequently individuals who should have been immune had a very sharp attack of malaria following exposure. Boyd[3] found the answer to this and solved an important problem. There are not only the four diseases grouped under the head of malaria, but each parasite has many strains. A strain prevalent in one area is frequently not found in another several hundred miles away. If A has an acute attack with strain C prevalent in area B and recovers from it, it is found that inoculation again with strain C shows an immunity. The attack is not so acute and he recovers more

rapidly. Now if he is inoculated with strain H, brought from area C several hundred miles away, he has another acute attack similar to the first one. In other words, he has some homologous immunity but no heterologous immunity. This was noted when careful observation of the action of parasites was made when therapeutic use of malaria was started in the treatment of general paralysis.[5]

Homologous immunity was very noticeable in experiments with birds.[6]

This acquired immunity was only found, according to the malariologist, in Africa and other tropical regions where malaria was hyperendemic, and then only in natives who had lived all their lives in the one area. Since the use of malaria parasites in the treatment of paresis has been pursued, it has been easily shown that even in temperate countries such as the Southern United States immunity exists.

Immunity has been found also in other temperate climates. From his extensive observations in Rumania Professor Ciuca and his associates found that a large proportion of the population was immune to *P. vivax* to such an extent that it was necessary to use *P. falciparum* or *P. malariae* in inoculations in the treatment of paresis.[2]

It was also found in these artificially inoculated patients that this complete homologous immunity lasted for at least three years, and there was some immunity remaining after seven years.[4]

In tropical regions immunity to malaria in hyperendemic areas is universal and quite complete among adults. Native children are attacked frequently by the malaria plasmodia and the attacks are less and less frequent until the age of 12, when, if the child survives, an immunity is produced which lasts the entire life of the native if he does not leave the locality in which he was reared.

Leaving the area *per se* does not lessen the child's immunity, but he would be subject to attacks of other strains of the parasite.

Though frequently parasites in small numbers are found in the blood of adults their presence does not cause a clinical attack, and does not cause anemia or other concomitants of malaria.

Some observers claim that the children of immune adult natives do not have such severe clinical attacks as children who have no immune parents and who come into the hyperendemic area from a non-malarious country. This is a mistaken idea. These children of immune parents have just as severe clinical attacks as other children, and frequently the attacks are more severe on account of lowered vitality encountered among children in tropical countries. Mortality rates for malaria with native children are very high, and they have to receive prompt treatment for their clinical attacks.

Some observers have been so impressed with the storing up of immunity by the repeated attacks in childhood, that they recommend slight, if any, treatment be given. They claim that treatment interferes with immunity and prevents the child from becoming immune on reaching maturity. This is a grave mistake. The child in the tropics, whether native or foreign, has an extremely severe clinical attack of malaria and unless active treatment is pursued it succumbs. Complete treatment is necessary, but it should not be carried beyond the cure of the clinical symptoms.

Wilson has determined by study of the native races of Africa that immunity is not dependent upon race, but upon the frequency of infections particularly in childhood.[7]

It has been noted in Africa that this adult immunity does not remain if the individual moves to another section of the country. This is particularly noticeable if a West African native is moved to East Africa. Many owners of plantations have desired to obtain stronger and more virile laborers from tribes living in more temperate sections. On their arrival they have frequently succumbed to malaria in epidemic form, and the condition of that plantation was worse than before.

It is true they had suffered from malaria before, but the strain was not the same as that prevalent in their new home and they had no immunity.

In Jeypore, India, the children have every appearance of sufferers from chronic malaria and undoubtedly have many acute attacks. The spleen rate of these children is 80 to 90 per cent, and the parasite rate averages 80 per cent. From this it would be imagined that the survivors who reach adult age would be weak and easily succumb to any infection. On the contrary, the adults are good physical specimens and do not have attacks of malaria. An adult European though, coming to live in this area, is promptly attacked by malaria in such a virulent form that he would succumb if not receiving treatment. In this localized community we have a good example of immunity.[8]

Theoretically the European should develop im-

munity and probably in some cases he does, but in most cases he develops blackwater fever before immunity is sufficiently strong to ward off attacks of malaria.[9]

Cause of Immunity.—Immunity is caused undoubtedly by an antitoxin originated by some action of the reticulo-endothelial cells after repeated stimulus by the malarial toxin. In certain bacterial immunities, such as typhoid fever, the reaction to the toxin is prompt and decisive and an immunity for several years occurs (now considered as lasting for five years). This reaction to the malarial toxin is slow and very much weaker, giving a less positive immunity. This is seen particularly in adults where immune bodies are slow to form and are not very protective. Even in children, who establish a positive immunity, repeated attacks of the disease are necessary to give real protection of a lasting character.[10]

When serum from monkeys, suffering from chronic *P. knowlesi* infection, is injected into monkeys suffering from an acute attack of the same infection, there occurs a definite depressing effect upon the course of the infection, with a distinct amelioration of the symptoms.[11] This definitely shows that the antitoxin is contained in the blood serum of the immune patient.

This effect is shown also in injections of immune blood into subjects suffering from acute infections. Such injections have a distinct effect upon the active symptoms, causing a reduction of temperature and a delay at least in relapses, and in children an immunity lasting for several months.

It is not thought that the immune bodies in the injected blood have a direct effect on the parasites, but they stimulate the reticulo-endothelial system to a specific reaction which causes a multiplication of endothelial cells which act directly on the parasites.[10]

Up to the present time the actual antitoxin has not been isolated, so its distinct nature cannot be determined.

Bacterial immunity can be obtained in some bacterial diseases by the injection of large numbers of killed bacteria which stimulate the formation of large quantities of antitoxin. As yet there has been no success in the use of parasites to form such a vaccine. This is primarily due to the fact that immunity in malaria is homologous, and the different strains are legion and of distinctly local habitat. There is very slight, if any, heterologous immunity. Furthermore it is apparent that immunity is caused by very large numbers of parasites in a viable state which would make a very dangerous human inoculation.

In actual formation of a positive immunity it appears that repeated acute attacks of malarial infection are necessary, and such attacks in an adult do not seem to give the same stimulus to the formation of the antitoxin as the same attacks in a child. In the latter case the immunity becomes progressively more positive as attacks are repeated, and beginning at about 12 years of age the immunity becomes permanent and lasting.

It has been held by many observers that a chronic latent infection is necessary to retain the immunity, but in many cases where immunity is shown to be present no parasites can be found in the peripheral blood. The immunity obtained in childhood is quite permanent in character, and in most cases lasts throughout the life of the subject.

The question arises "is immunity an academic problem of scientific interest or has it a practical side of interest to the physician?"

It is believed that too little attention has been paid to the practical value of this protection. In the tropics large plantations, of which there are many, have at the most one physician employed with frequently limited medical supplies and equipment. The owners employ him primarily to keep as many laborers actively at work as possible.

Where malaria is an important and frequent disease the plantation physician treats all the men suffering from malaria in the same way, and in a great many instances in a way to reduce what immunity they already have.

From the writer's observation sick call in these large plantations in an endemic region is conducted in a dispensary manner, with the dispensing of quinine or other antimalarial drug to all comers if there is any history of fever. With only one doctor very little more can be done unless a study of the plantation personnel is made.

By considering the question of immunity, this work can be greatly simplified and the plantation personnel can receive better and more definitive treatment.

The plantation population should be divided into three classes and records covering the three classes kept up to date.

The first class consists of children up to the age of 15 who are frequently infected with malaria plasmodia. They, of course, should re-

ceive careful treatment preceded by complete blood examination. The treatment, though, should not be carried to the point of complete eradication of the plasmodia, but should only consist of the cure of clinical symptoms, which in the case of children can rapidly be obtained.

The second class will consist of adults and adolescents who have always lived in this locality. If these persons come to the doctor for the relief of symptoms simulating attacks of malaria, it is very probable that there is some other cause and a thorough search for the cause should be made.

It also should be kept in mind that any malaria prophylactic treatment should not be given to these men. When immunity has been acquired it is certain that prophylactic drug treatment does tend to diminish this immunity, and later in the presence of an epidemic of malaria the same treated immunes may experience malaria attacks.

The third class consists of persons who have taken up their residence in this area after reaching adult age. These will consist of natives and also Americans and Europeans who have only recently taken up residence in the tropics. This class is much less numerous than the preceding two classes, but will require more treatment. If infected with malaria definitive treatment is required. Caucasians will frequently run great risk of blackwater fever, particularly if allowed to stop treatment before complete cure is obtained. Natives in this class, on the other hand, will experience repeated relapses and in addition to definitive treatment protection from reinfections should be given if possible.

By dividing the personnel into the three classes, the plantation physician will be much less harried by demands for medical attention, and can use his limited time and frequently limited equipment and supplies to give proper medical service to the real sick who naturally require more attention if the workers are to be kept in good physical condition.

Such a system will be necessary after the war when everything is more or less chaotic, and great effort must be exercised to get the work running smoothly, and all labor must be kept at work as steadily as possible. Natives are thoroughly familiar with the usual signs and symptoms of malarial infection, and such a study of the personnel will prevent malingering which is a great tropical problem.

CONCLUSIONS

We have, therefore, three classes of personnel on a tropical plantation:

(1) Children and adolescents who, when infected with malaria, are to be treated only so far as to cure their clinical symptoms, but not to eliminate the infection completely, allowing them to gradually increase their malarial immunity.

(2) Adults who have always lived in this area and who have become completely immune to acute attacks of malaria. These patients, even when parasites are demonstrted in the peripheral blood, will not have acute attacks of malaria. When they do have attacks of this character they are probably not malarious, and complete examinations should be made to clarify the diagnosis so that proper treatment may be instituted. It should be remembered that there are many tropical infections which give febrile reactions which simulate malaria.

(3) Adults who have recently taken up residence in the area, but who have lived up to adult state in some other section of the country where a different strain of malaria parasite is undoubtedly present. These men will have malarial attacks which have a heterologous origin when compared to the local strain and have no immunity to the prevailing plasmodia.

Patients from this class should be treated actively for malaria. They will acquire only slight immunity and such immunity will not be lasting.

In this class should be included persons who have lived most of their life in temperate regions, and who, if belonging to the Caucasian race, are liable to attacks of blackwater fever if their attacks of malaria are not properly treated. These patients should receive complete anti-malarial treatment to assure the elimination of the infection before any destructive action on the erythrocytes can take place.

REFERENCES

1. Ciuca, M.; Ballif, L.; and Chilarescu-Vieru, M.: Bull. Soc. Path. Exot., **26**:300, 1933.
2. Ciuca, M.; et al.: Arch. Roumaines, **1**:577, 1928.
3. Boyd, M. F.; Kupper, W. H.; and Matthews, C. B.: Amer. Jour. Trop. Med., **18**:521, 1938.
4. Boyd, M. F.; and Matthews, C. B.: Amer. Jour. Trop. Med., **19**:63, 1939.
5. Thomson, J. G.: Proc. Royal Soc. Med., **24**:499, 1931.
6. Gingrich, W.: Jour. Prev. Med., **1**:197, 1932.
7. Wilson, D. B.; and Wilson, M. E.: Trans. Royal Soc. Trop. Med. & Hyg., **3**:431, 1937.
8. Perry, E. L.: Indian Jour. Med. Res., **2**:456, 1914.
9. Thomson, J. G.: Tr. Roy. Soc. Trop. Med. & Hyg., **26**:483, 1933.
10. Lorando, N.; and Sotiriades, D.: Jour. Trop. Med., **39**:197 (Sept.) 1936.
11. Coggeshall, L. T.; and Kumm, H. W.: Jour. Exper. Med., **66**:177, 1937.
12. Christophers, S. R.: Indian Jour. Med. Res., **12**:273, 1924.

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THE USE AND ABUSE OF PHYSICAL THERAPY IN DERMATOLOGY*

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Every few years it seems opportune for a physician to recount his experiences with the various implements of his profession, new or old, and since physical agents have so largely superseded other methods of treatment in dermatological conditions, a discussion of the author's experiences with some of these agents, used in the past thirty years, may be of some value. The machines and rays used are familiar to all, but sometimes their use is abused and frequently physician and laity alike help to spread a propaganda that these rays, even properly used, are dangerous.

No attempt will be made in this essay to describe the various electrical appliances and rays nor to discuss or outline methods of operation.

It is possible for a dermatologist to practice his specialty, using only salves and lotions, and directions for changes in hygiene or the correction of allergy, to heal or relieve skin conditions, but in the light of modern scientific achievements it would be foolish to attempt it without the use of the several physical agents that are available.

This report does not include mention of baths, massage, colonic irrigation, fever therapy or cryotherapy, all of which have been and are being used by dermatologists in indicated instances, and with satisfactory results.

It is universally admitted, however, that many skin conditions are, with the aid of roentgen rays, radium, ultraviolet light, high frequency desiccation, and electrolysis, handled more efficiently, achieving better results.

That the apparatus to be discussed should only be available to and only operated by physicians trained in their use or by a technician under the guidance of trained physicians should be an accepted axiom. The machines are complicated, and what is even more important, the emanations which they produce do not only help to cure diseases, but may also cause disease and destruction if used improperly.

In my opinion, it is unfortunate that persons untrained in the diagnosis of disease may in many states of the union have the privilege of practicing electrolysis, ultraviolet light and roentgen ray therapy and electrodesiccation without the supervision of a physician. When deforming reactions are produced which are worse than the original ailment, there is no recourse save a possible suit for damages, and to this many people object. Furthermore, the fact that one has an M.D. after his name is not sufficient justification for the use of any of the aforementioned rays or apparatus. It is unfortunate that physicians without proper training permit themselves to be lured into buying such machines or apparatus by sale representatives, by the promise that with the aid of these rays, and methods, they will be able to cure many skin conditions. I was told by such a representative in my office that with a cold quartz light I could cure acne vulgaris, psoriasis, epidermophytosis, and other conditions in from two to five treatments. Quite a few physicians of my acquaintance bought this apparatus and told me of their disappointment when it did not produce expected results.

There are three general rules that I expound to all those who would use physical agents in the treatment of skin conditions that if followed would bring about satisfactory results to both the physician and the patient:

(1) Know the ray, electrical apparatus, or other physical means to be used.

(2) Know its indications and contraindications.

(3) Know the diagnosis of the condition that is to be treated.

The first of these rules is easy of fulfillment. Any authoritative book or monograph will supply the needed information. The second rule is more difficult to fulfill. Careful study of the reports of the results obtained by trained physicians and your own recorded experiences can alone supply that information. The third rule is the most important. Only a physician trained in the diagnosis of the diseases to be treated can supply that knowledge. Without knowing the diagnosis, it is wrong to employ a physical agent if one does not know why, or in what condition it is being employed.

For example, a patient with epithelioma who came to the clinic had been under ultraviolet irradiation for several months, with a very undesirable result. In another, a malignant melanoma was treated with "teasing" doses of desiccation on the supposition that it was a mole; the proper procedure would have been to excise

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the lesion by a wide margin and to have a histopathological examination of the specimen. This would have given a correct diagnosis and possibly prevented the rapid metastasis and death which followed.

ROENTGEN RAYS

Of the many types of apparatus or rays used in the treatment of skin diseases, roentgen rays rank first in value to the dermatologist. There are more conditions in which the primary effect of these rays accomplish a good cosmetic result, and if used with discretion and care, without future untoward sequelae. Some roentgenologists do not use the same dosage or filters that dermatologists do in the treatment of skin diseases. It is my opinion that the physician trained in the use of the roentgen rays and in the diagnosis of skin conditions gets better results, especially in conditions such as acne vulgaris, eczematous dermatitis, furuncles, and so on, than does the roentgenologist, because the dermatologist knows and uses such other means of treatment as are necessary to aid the roentgen rays to bring about the desired result.

It has been my experience that the use of small doses of roentgen rays in such conditions as acne vulgaris, eczematous dermatitis, and pruritus, will accomplish as good a result as if larger doses are used, and are less likely to cause unsightly sequelae, and it has been my practice for the past several years to use about 40 r. (about $\frac{1}{8}$ erythema dose) in preference to double that amount, as is the practice of some. Of course, in some instances a larger dose is required, and in malignant conditions emphasis is placed on eradicating the disease rather than on preventing telangiectasia or atrophy.

Several patients have said that this or that doctor has given them roentgen ray treatments once or twice a week for a year. This seemed incredible, but whether true or false, in the face of such histories further roentgen ray therapy is refused. Such treatment is not in accordance with good dermatologic practice. There is also an occasional tendency on the part of roentgenologists and dermatologists to continue to give repeated roentgen ray exposures to conditions that do not seem to respond or that recur repeatedly, whereas, if the factor causing the eruption is detected and removed, the condition will heal with the aid of bland ointments. Eight dentists and physicians, whose dermatitis was caused by procaine, dental cement, soaps, medicated alcohol, bichloride of mercury, and so on, had ulcers, telangiectases and atrophy as the result of misapplied roentgen therapy. It has been my practice not to use the roentgen rays, or else to use them sparingly if the condition is such that a correction of diet, elimination of contact substances or the application of some ointment would accomplish the desired result.

Three patients, two women and one man, had marked telangiectases as a result of roentgen ray treatment for pruritus ani or vulvae. Three others were technicians working with the fluoroscope, and not being physicians, should have been warned of possible roentgen ray sequelae. Seven developed these blemishes after treatment for acne vulgaris, and one followed repeated roentgenograms preceding pneumothorax therapy. Six reactions resulted from roentgen ray treatment for hypertrichosis. One each reacted following treatment for tuberculous glands, keratosis senilis, keratosis seborrheica, verruca vulgaris, and six had had treatments for eczematous dermatitis. In all of these, except the tuberculous gland, proper control of the roentgen rays, and the use of other measures, such as electrodesiccation, would have avoided undesirable reactions.

It is generally accepted that one of the first things to investigate in each candidate for roentgen ray therapy is whether the patient has had such treatments elsewhere, from a physician or otherwise. This is not always easy, as some patients when refused roentgen rays by one physician will go to another and wilfully deny having had any roentgen ray therapy. The history of each patient under our care is always taken in the presence of the secretary so that there is at least one witness to all statements made by the patient. Only careful, tricky questioning will make such people admit having received treatment from others. I make it a practice to emphasize to the patient the danger of over-treatment from roentgen rays.

It is unnecessary for me to mention that one's roentgen ray machine should be frequently examined and calibrated.

In general only unfiltered rays or those filtered by one-half to three millimeter of aluminum have been used. I do not believe that I am competent to give deep roentgen ray therapy, nor do skin conditions often require such treatment.

The indications for roentgen rays as shown in *Table 1* are numerous, but many carry with them the qualification that whereas the rays will benefit the conditions, they will not of themselves bring about a cure. For instance, in the treatment of ringworm of the scalp, epilation

by the rays using about 300 r. (one erythema dose) helps to bring about a more rapid cure. It is necessary, however, to apply parasiticides (such as ammoniated mercury ointment) to complete the cure. Atopic eczema, seborrheic dermatitis, and contact dermatitis are very often markedly benefited when treated by the rays, but unless the etiologic factor is detected and removed, the eruptions will recur, and if at each recurrence resort is made to the roentgen rays, eventually the patient will suffer the severe sequelae of a roentgen ray dermatitis. This also holds true of epidermophytosis. As for psoriasis, this disease is noted for its recurrences and is rarely cured, and it is dangerous to rely upon roentgen rays to bring about a good result knowing that the lesions will recur and continue to recur.

In some instances, epitheliomata can be made to involute by these rays, but I have found it more satisfactory to combine the use of high frequency desiccation and roentgen rays or radium irradiation. The diseases in which the roentgen rays are indicated are too numerous to discuss separately. There are, however, a group of conditions which I have classed as of questionable indication, as for instance herpes zoster, herpes simplex, impetigo contagiosa, granuloma inguinale, erysipelas, and lichen planus.

ROENTGEN RAY

(Not more than a total of 4 e.d. or 1,200 r's except in epithelioma)

INDICATED	CONTRAINDICATED	QUESTIONABLE
Temporary hair epilation (ringworm treatment) 1 e.d.	In previously irradiated patients	Seborrhea sicca (scalp)
Seborrheic dermatitis 4 ex.=1 e.d.	For permanent hair epilation (permanent scars and telangiectasis result)	Seborrheic dermatitis (scalp)
Atopic eczema (careful, only a few exposures, small doses. Elimination of cause necessary)	Nevus vasculosus	Pityriasis rosea (condition self-limited, only symptomatic treatment. A few roentgen ray exposures will shorten duration)
Epidermophytosis—acute, edematous phase 4 ex.=1 e.d.	Angioma	Hyperhidrosis (result not permanent)
Blastomycosis 8 ex.=3 e.d.	Rosacea	Lupus vulgaris
Actinomycosis 8 ex.=3 e.d.	Verruca accuminata (on genital region=reaction on gonads)	Lupus vulgaris scrofuloderma
Granuloma fungoides 20 ex.=5 e.d.	Lipoma	Lupus erythematosus
Acne vulgaris 24 ex.=3 e.d.	Fibroma	Herpes simplex
Verruca vulgaris (when isolated or single) 3 ex.=3 e.d.	Those with blood dyscrasias (anemias, etc.)	Herpes zoster
Lymphoblastoma and leukemia (for relief temporarily) 20 ex.=5 e.d.	Perleche (treat cause)	Prurigo, nodular
Psoriasis (of limited value, condition recurrent) 4 ex.=1 e.d.	Tinea versicolor	Impetigo contagiosa (to be used when other means fail)
Keloid (young) 4 ex.=1 e.d.	Lupus erythematosus	Granuloma inguinale (of no value in this series)
Skin pain (in carcinoma or herpes zoster etc.) 3 ex.=1 e.d.	Pemphigus	Keloid (old)
Granuloma annulare 6 ex.=1 e.d.	Dermatitis herpetiformis	Folliculitis (treat cause)
Epithelioma 10 ex.=5 e.d.	Parapsoriasis	Paronychia—atrophy of nail
Furuncle 2 ex.=1 e.d.	Clavus	Lichen planus
Carbuncle 2 ex.=1 e.d.	Callositas	Erysipelas (sulfonamides preferable)
Pruritus ani et vulvae (few treatments) 8 ex.=1 e.d.		Onychomycosis (causes reaction on nail)
Rhus dermatitis (carefully) 4 ex.=½ e.d.		Coccidoidal granuloma
Pityriasis rosea 4 ex.=½ e.d.		Pruritus (search for and remove cause)
Sycosis vulgaris 8 ex.=1 e.d.		Scleroderma (results in some)
Granuloma pyogenicum after des. 6 ex.=3 e.d.		
Tinea barbae (tinea sycosis) 8 ex.=1 e.d.		

e.d.=Erythema dose.
ex.=Exposures (treatments).
Des.=Desiccation.

Table 1

In some of these diseases there are other less dangerous means which will give as satisfactory a result, as for instance, sulfathiazole internally in erysipelas and sulfathiazole ointment or gentian violet in impetigo contagiosa. In others the condition is either self-limited or of too little consequence to resort to roentgen rays. Although in the indicated and questionably indicated columns I have placed what appears to be the same condition, as for instance pruritus, keloid and pityriasis rosea, I think a few words will tend to clarify this. In my experience "young keloids" have readily responded to the rays, whereas "old keloids" (of more than two or three years' duration) do not respond. Pruritus, especially of the anus and vulva, is certainly relieved by the rays, but the temptation to continue this form of treatment has caused many cases of ray dermatitis. This also applies to pityriasis rosea, but in this condition, which is self-limited and involutes within a few weeks or months with or without treatment, three or four exposures of 40 to 80 r. will rapidly bring about involution of the lesions and is indicated if the patient is unduly self-conscious of the condition and must give up his or her daily duties.

It should be pointed out that there are some important contraindications which deserve special emphasis. First, previous irradiation should cause the physician to hesitate if not absolutely to refuse further treatment. Requests for the rays for permanent hair epilation (beards, and so on) should be discouraged and the patient warned that the resulting scars and telangiectasia will prove far uglier than the excess hair. Patients with blood dyscrasias, especially the anemias, are bad subjects for irradiation. Rosacea is almost never benefited by these rays nor is pemphigus, lupus erythematosus, lipoma or fibroma. In the treatment of verruca on the periungual tissues, caution in the use of roentgen rays is necessary, because the growth of the nail may be interfered with and the nail deformed.

RADIUM

What has already been said of roentgen rays applies also to radium, except that radium is of value to lesions in sites inaccessible to the roentgen rays, or if the lesions are very small. Radium is of especial value in the treatment of angiomata of the cavernous type.

ELECTRODESICCATION

INDICATED	CONTRAINDICATED	QUESTIONABLE
Nevus pigmentosus (mole)	Chancroid	Xanthelasma
Nevus unius lateralis	Angioma, cavernous type	Verruca palmaris et plantaris
Verruca vulgaris		Lupus erythematosus (discoid type)
Verruca filiformis		Molluscum contagiosum
Verruca accuminata		Angioma
Leukoplakia		
Lupus vulgaris		
Epithelioma, basal cell type		
Seborrheic keratosis		
Senile keratosis		
Roentgen ray ulcers		
Rhinophyma (to re-shape nose)		
Granuloma pyogenicum		
Granuloma inguinale (small circumscribed lesions)		
Keloid (followed by roentgen ray irradiation)		
Cornu cutaneum		

Table 2

ELECTRODESICCATION

Next in value to the dermatologist is the apparatus used for electrodesiccation. The lesions in which desiccation is indicated are primarily nevi, verrucae, leukoplakia, epitheliomata, senile and seborrheic keratoses, lupus vulgaris, and so on. By this means the more superficial lesions, such as the verrucae, seborrheic keratoses, and leukoplakia, may be "wiped off" with "light" desiccation. The basal cell epitheliomata can often be completely irradiated by desiccation alone, but the burning out must be sufficiently deep to remove all of the lesion. In this respect, it may be worthwhile to state that although a good cosmetic result is always the aim of the dermatologist, nevertheless, one should not sacrifice a cure, as for instance, in epitheliomata, because of a desire to have a "pretty" result. On the other hand, if desiccation is used for a mole, it is preferable to desiccate lightly, doing the operation in two or three sittings in order to avoid a visible scar. The ugly nasal deformity known as rhinophyma may be remedied and the nose completely re-shaped, producing a satisfactory result by desiccation or the electric cutting knife. Electrodesiccation is of questionable use in xanthelasma, which usually occurs on or under the lids, and when desiccated, however carefully, leaves scars. It is unnecessary in molluscum contagiosum in which the lesion can be healed by merely removing the central plug with a narrow blade or by lightly applying dichloracetic acid with a cotton swab. It is contraindicated in chancroid which, in the light of modern chemotherapy, can now be healed by the internal and external use of the sulfonamide drugs.

It is of value in granuloma pyogenicum, but having had several recurrences in this condition after electrodesiccation alone, such desiccation is now always followed by the roentgen rays. It is of value in verruca palmaris when these lesions are too scattered for roentgen ray therapy, but care is required in the same condition on the soles because walking, attempts at dancing, and so on, usually lead to irritation and secondary

ELECTROLYSIS

INDICATED
Hypertrichosis
Nevus pigmentosus (mole)
Nevus araneus
Dilated vessels in telangiectasia and rosacea
Lupus vulgaris
Sebaceous adenoma
Tricho-epithelioma

Table 3

ULTRAVIOLET IRRADIATION

INDICATED	CONTRAINDICATED	QUESTIONABLE
Lupus vulgaris (with pressure)	Those with idiosyncrasy to the actinic rays	Rosacea
Alopecia areata	Miliaria rubra	Infantile eczema
Psoriasis (sub-erythema dose)	Xeroderma pigmentosum	Eczema (neurodermatitis) may become irritated
Pernio	Hydroa vacciniforme	Eczema seborrheicum (may become irritated)
Frost bite (sub-erythema dose)	Acne keloid	Acne vulgaris (may help)
Roentgen ray dermatitis (erythema dose)	Lupus erythematosus	Epidermophytosis
Infectious eczematoid dermatitis	Herpes simplex	Rhus dermatitis
Pityriasis rosea (erythema dose)	Urticaria	Parapsoriasis
Acne vulgaris	Tinea versicolor (vitiliginous type)	Erysipelas
Sycosis vulgaris	In those taking sulfonamides	
Paronychia		
Erysipelas (erythema dose)		
Wounds, sluggish		

Table 4

infection. It is an excellent medium for removing mucous cysts, rarely leaving a noticeable scar. In ulcers and keratoses resulting from roentgen rays it is of utmost value.

ELECTROLYSIS

Electrolysis is of value in a few conditions, but in these conditions this procedure is usually superior to electrodesiccation or other means. It is the most widely used means by which hair can be permanently removed without leaving blemishes. Karp[1] has lately reported the use of a special high frequency apparatus for the epilation of superfluous hair, by which four times as many hairs may be removed in the same period of time as by electrolysis, with little or no pain. I have had no experience with this method. Electrolysis is the best means by which the dilated vessels of telangiectasia or of rosacea may be occluded. In nevi pigmentosa (moles) it sometimes seems a better medium than desiccation and especially so if hairs are present in the moles. It can be used to remove verrucae, but electrodesiccation is preferable.

ULTRAVIOLET IRRADIATION

Mercury vapor shortwave ultraviolet light is the medium most often employed in this country. Other methods of more or less common use in Europe are rarely, if at all, used here. The Finsen rays apparatus carries too great an expense, and the carbon arc light does not produce sufficient rays to be satisfactory.

Although it is true that the ultraviolet rays have few primary indications, they are nevertheless used as often as any other physical agent. In lupus vulgaris the ultraviolet rays are usually applied with pressure which thereby partially exsanguinates the lesions. In my experience, however, desiccation has given better results. The ultraviolet rays are frequently used in alopecia areata primarily for stimulation purposes and for the same reason in pernio, frost bites, paronychia, and sluggish wounds. It is of value in pityriasis rosea, in which an erythema dose is aimed at, because with an ensuing exfoliation the lesions disappear. It is also of value in some cases of psoriasis, but in this disease it is well to remember that an erythema or burn is contraindicated as it occasionally causes an exacerbation of the psoriasis lesions. It seems to be of benefit in some cases of acne vulgaris, sycosis vulgaris, infectious eczematoid dermatitis. In erysipelas there are often beneficial effects if an erythema dose is given. It is to be remembered, however, that chemotherapeutic means are preferable. The ultraviolet rays are of questionable value in eczema, adult or infantile types, and occasionally instead of helping the condition cause an extension of it. In rosacea, it has rarely given good results. The contraindications are important, and in some instances if not observed, may cause actual damage. In patients with xeroderma pigmentosum and hydroa vacciniforme the disease is apparently due to hypersensitivity to the actinic rays, and instances have occurred in which these conditions were treated with ultraviolet rays, and caused serious reactions. There are also those who "burn" quickly on exposure to the sun's rays and even an exposure of a second or two to the ultraviolet rays will cause an erythema reaction and discomfort.

All too frequently, the ultraviolet rays are used because the physician has no other means of physical therapy at hand and the rays are given without determining whether they are indicated or not, as in lichen planus, eczematous dermatitis, epidermophytosis, alopecia prematura, alopecia seborrheica, scabies, urticaria, and many other more or less contraindicated conditions, in almost all of which they have been valueless. In tinea versicolor, the ultraviolet rays may cause the condition to become vitiliginous and treatment resistant.

CONCLUSIONS

The agents so briefly discussed are valuable, but may cause irremediable damage if used in ignorance and without a knowledge of the diagnosis of the condition to be treated, and whether the physical agent is indicated in this disease.

BIBLIOGRAPHY

1. Karp, F. L.: High Frequency Current in the Treatment of Hypertrichosis. Arch. Dermat. and Syph., 43:85-91 (Jan.) 1941.

DISCUSSION (*Abstract*)

Dr. J. O. Fitzgerald, Jr., Richmond, Va.—I pose in no way as a dermatologist, but would like to say that some time ago I heard Dr. Knapp, of the University of Minnesota, advise against the use of ultraviolet light applications in cases of erysipelas which had previously received treatment with sulfonamide drugs. Would Dr. Robinson tell us why this should not be done?

Dr. Robinson (closing).—Several investigators have shown that the sulfonamide drugs are of the group of light-sensitizing drugs. If after they are taken the patient is exposed to sunlight or ultraviolet light, a dermatitis will often appear.

TUBERCULOUS PERITONITIS*

By D. WOOLFOLK BARROW, M.D.†
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Sixty-seven patients with tuberculous peritonitis were seen in The Good Samaritan and St. Joseph Hospitals in Lexington, Kentucky, from 1930 to 1940. The age incidence is similar to that of pulmonary tuberculosis. Although 61 per cent of these patients were less than 30 years of age, it is encountered throughout the life span. It is not exclusively a disease of childhood (*Fig. 1*). Fifty-five and five-tenths per cent of the patients were female; 44.5 per cent of the patients were male (*Fig. 2*). In both males and females the most extensive involvement is frequently in the pelvis and in the female the fallopian tubes are extensively involved. But the almost equal sex incidence raises some question as to how frequently tuberculous peritonitis is due to primary tuberculous salpingitis. Fifty-three and seven-tenths per cent of the patients were Negroes. Weighing the white and Negro population by total numbers served by these hospitals, it is found that tuberculous peritonitis occurs approximately seven times as frequently in Negroes as in white patients (*Fig. 3*). Again weighing the total number of service to private patients, tuberculous peritonitis was encountered four times as frequently in service as in private patients (*Fig. 4*).

Less than one in five of these patients had active tuberculosis elsewhere. An additional one-fifth had x-ray evidence of old inactive pulmonary tuberculosis, frequently nothing more than Ghon's tubercle. In 58 per cent of the patients in this group it was impossible to demonstrate any other foci of tuberculosis. Specifically, 6 per cent of this group of patients with tuberculous peritonitis had active pulmonary tuberculosis of the adult type. In an additional 3 per cent enlarged mediastinal lymph nodes were seen on x-ray of the chest and these were believed to denote childhood tuberculosis. Three per cent had both pleural and pericardial effusions, that is, polyserositis, thought to be of tuberculous origin. A patient had Pott's disease; a patient had tuberculous epididymitis; a patient died of tuberculous meningitis two years after the disappearance of clinical signs of tuberculous peritonitis; and a patient died of miliary tuberculosis. In short, the presence or absence of tuberculosis elsewhere in the body is of little value in differential diagnosis.

Tuberculous peritonitis can become well established in a very short time, perhaps in a matter of days. In one patient in this group a diagnosis of partial intestinal obstruction was

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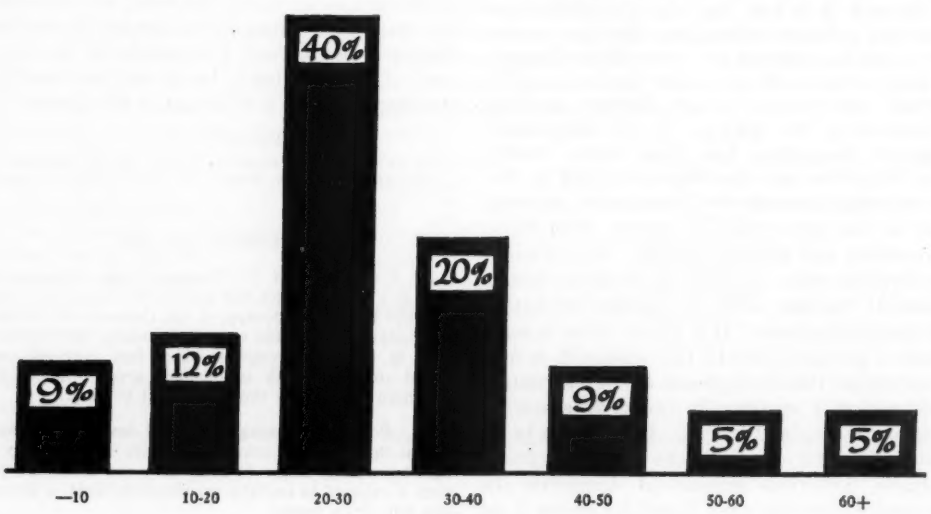

Fig. 1
Age Incidence

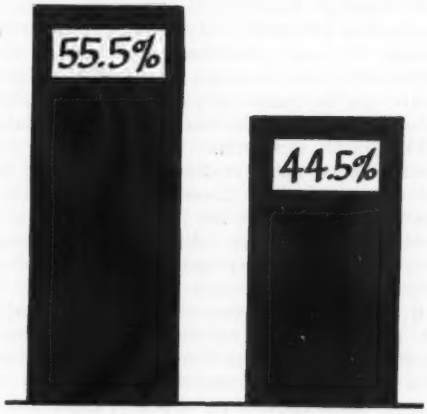

Fig. 2
Sex Incidence

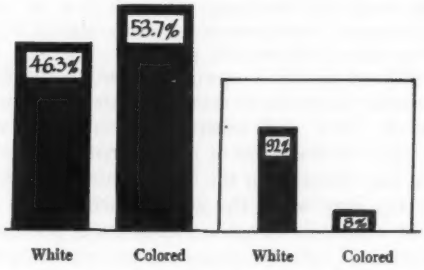

Fig. 3
Population of area served. Colored 7x as frequent.

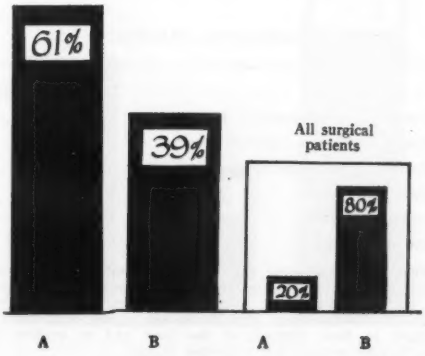

Fig. 4
A, Service patients (4x).
B, Private patients.

made six weeks after hysterectomy. At the time of the original operation tubercles were not seen nor encountered on pathologic study, but at the secondary operation the entire peritoneal surface and the intestines were studded with tubercles, and the diagnosis of tuberculous peritonitis was proved by biopsy. There was no obstruction.

Tuberculous peritonitis can also disappear rather quickly. In two patients reoperated upon within three months of the time tuberculous peritonitis was first demonstrated by laparotomy, the pathologic changes had almost entirely disappeared. Under less favorable conditions, the disease may persist for years.

Pathologically speaking, there are three forms of tuberculous peritonitis, although each of these may represent but a single stage of the same process. Tubercles are present in every instance and may be either fibrous or ulcerative and caseous. In one group ascites is a prominent feature and may be associated with both pleural and pericardial effusions. Sixteen liters were removed from the abdominal cavity of a patient. Such a large amount is uncommon. The specific gravity is above 1015. Erythrocytes, endothelial cells and particularly lymphocytes are present, but tubercle bacilli are difficult to demonstrate even by guinea pig inoculation. This fluid may be pocketed by intra-peritoneal adhesions. In one of the patients the polyserositis recurred promptly after tapping and was only controlled by massive doses of plasma. Her plasma protein was found to be 4.9 per cent and it is believed that the polyserositis was in large measure due to this low serum protein, since it disappeared promptly after the administration of plasma.

In a second group, large caseous mesenteric nodes and widespread intraperitoneal adhesions are encountered, i.e., plastic peritonitis. It is in the group that laparotomy is especially dangerous, since the intestines may be matted to the abdominal wall and may be entered before it is possible to get into the peritoneal cavity. In such patients with plastic peritonitis enlarged and sometimes confluent mesenteric nodules may be present and not infrequently breakdown and become adherent to adjacent structures. These adhesions may be responsible for the subacute and acute intestinal obstruction which so frequently is responsible for a fatal termination. Complications are frequent and serious. Lysis of adhesions is impossible due to their extent and density. Signs and symptoms of acute or subacute intestinal obstruc-

tion may form a prominent part of the clinical picture.

In a third group the only complaint may be a palpable abdominal tumor. In such patients the omentum becomes fibrous and hard and is palpable as a discrete mass. In six patients in this group (9 per cent) an exploratory laparotomy was performed in the belief that this mass was some type of intraperitoneal tumor or cyst. Tuberculous peritonitis was not considered preoperatively as a possibility.

Diagnosis.—That the clinical picture was not always clear is shown by the fact that in almost one-half of this group tuberculous peritonitis was not considered preoperatively as a possible cause of the patient's symptoms. This is an unavoidable error in many instances. For example, tuberculous peritonitis was encountered during the course of a repair of an umbilical hernia in one patient and during an inguinal herniorrhaphy in another. There were no systemic complaints. To make a preoperative diagnosis of tuberculous peritonitis is obviously impossible under such conditions. There is little uniformity of clinical findings, as illustrated by the variety of reasons why the patient came to the physician. The "chief complaint" was: distention in 21; chronic abdominal pain in 15; acute abdominal pain in 7; ascites in 7; palpable abdominal tumor in 6; loss of weight in 3; and fever in one patient.

A detailed analysis of clinical signs and symptoms is more promising. Seventy-five per cent of the patients in this group had abdominal pain, usually mild in character and varying widely in the point of maximum intensity. Distention of varying degree and fever of 100° F. or more were present in 82 per cent of the entire group. Seventy-seven per cent had lost weight. Thirty-two per cent had complained of nausea and vomiting. Sixty-five per cent had ascites, usually small in amount. Abdominal tenderness was present in 71 per cent, and rigidity in 15 per cent. Less than 10 per cent of this group had the so-called doughy abdomen which is said to be characteristic of tuberculous peritonitis. A secondary anemia was frequent (41 per cent had a red count of less than four million per c. mm.). Hypoproteinemia is not uncommon; and although complete data are lacking, the degree of hypoproteinemia seemed to follow the degree of anemia. In the six patients with acute intestinal obstruction superimposed upon their tuberculous peritonitis, the characteristic signs and symptoms of this condition were present.

To make an unequivocal clinical diagnosis of tuberculous peritonitis may require considerable courage in many instances. In patients with polyserositis, the diagnosis of tuberculous peritonitis can be made with reasonable certainty by exclusion of cardiorenal disease by clinical and laboratory examination. In individuals with evening fever and symptoms referable to the abdomen, particularly distention, the diagnosis of tuberculous peritonitis must be entertained after typhoid fever has been ruled out. The younger the patient the more suggestive of tuberculous peritonitis. But in many instances it may be difficult to arrive at the correct diagnosis without prolonged observation or by exploratory laparotomy. Since the complications associated with exploratory laparotomy are so frequent and serious, when there is no urgency, there can be no question about the advisability of omitting, or at least delaying this procedure. We prefer peritonescopy to laparotomy as a diagnostic procedure where one or the other is essential. Where a palpable abdominal tumor is present, laparotomy may be demanded through fear of the unfortunate consequences of delay should it be a cancer. Differential diagnosis will not be considered in detail except to mention the preoperative diagnosis in those patients in whom it was in error and tuberculous peritonitis was found to be the cause of their symptoms (*Table 1*). The character of the fluid obtained on paracentesis may be of the greatest help, for in no other condition except carcinomatosis are there endothelial cells, lymphocytes, and erythrocytes.

Complications.—Fecal fistula was a frequent sequel of so-called therapeutic laparotomy (35 per cent). It occurred spontaneously in but one of these sixty-seven patients. Treatment

PREOPERATIVE DIAGNOSIS

	No. of Patients
Chronic pelvic inflammatory disease	11
Intestinal obstruction (six were acute)	9
Abdominal tumor (type unknown)	6
Chronic appendicitis	3
Chronic cholecystitis	1
Acute appendicitis	1

Tuberculous peritonitis was found incidentally in one patient during an umbilical hernioplasty and in another patient during an inguinal hernioplasty. Autopsy revealed tuberculous peritonitis to be the cause of death in one patient who had been thought to have cirrhosis of the liver and in another who was thought to have had congestive failure.

Table 1

here does not differ in character from that advocated elsewhere for the same condition.

Acute intestinal obstruction was encountered in six instances. It was associated with widespread intraperitoneal adhesions and yet gangrene of the intestine was not encountered. Death occurred in the three patients in whom a lysis of adhesions was attempted. Recovery followed simple enterostomy in three instances. Analysis of a larger series of patients might yield different results, but extensive operative procedures are very difficult in such patients and the minimal procedure compatible with life is probably the one of choice. Such adhesions tend to disappear with time, since the enterostomy openings close spontaneously. Persistent superficial ulceration of the skin will usually heal following localized exposure to ultra-violet light.

Prognosis.—Almost 90 per cent of these patients were followed from two to ten years and their physical status was determined. We were unprepared for so high a mortality rate (*Fig. 5*). It was our clinical impression that the results were much better, illustrating the fallacy of clinical impression when contrasted with exact follow-up studies. By far the greatest single cause of death was postoperative complications. Most of these occurred in patients in whom laparotomy was undertaken as a therapeutic rather than a diagnostic measure and were thus avoidable.

The second cause of this high death rate was the lack of sanitarium care. We are firmly convinced that those patients who underwent adequate and prolonged supportive treatment, even with minimal complaints, had a much better prognosis. Intestinal obstruction, usually subacute, and emaciation were the usual causes of death in those patients who did not recover.

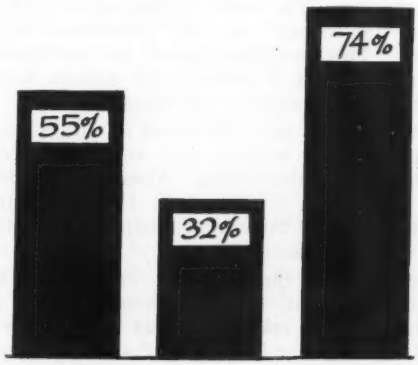

Fig. 5
Mortality

Treatment.—That one cannot depend solely upon laparotomy for cure in these patients is clearly demonstrated by the 20 per cent mortality experienced in the group of patients in whom the presence of tuberculous peritonitis was first suspected and confirmed at the time of laparotomy. In the aggregate, this group represented the more favorable patients with minimal pathologic changes and each of these except one left the hospital in good physical condition. Medical care following discharge, however, was haphazard at best and from two to ten years later 20 per cent had died from tuberculous peritonitis. We are firmly convinced that patients with tuberculous peritonitis must have the same supportive measures proved to be of therapeutic value in the treatment of patients with tuberculosis elsewhere, i.e., rest, good food, fresh air, iron, vitamin C, cod liver oil, and so on. Sanitarium care in Kentucky is rarely available for such patients, and yet of the ten patients receiving adequate sanitarium care there was but one death.

The removal of embarrassing fluid is a "must" in the treatment of these patients. Defervescence has been observed frequently in patients following abdominal tap. This is not to say that every patient with tuberculous peritonitis should be tapped, for in many instances the amount of fluid involved is too small to warrant the procedure. Again it is sometimes impossible to remove the fluid since it may be pocketed. But in those patients with ascites, particularly with high fever, clinical improvement has followed paracentesis. Following paracentesis, the insufflation of air or oxygen is optional. If pneumoperitoneum favors the development of adhesions it must be condemned, since intestinal obstruction due to adhesive peritonitis is the most frequent cause of death.

In the group of patients in whom the diagnosis of tuberculous peritonitis seemed reasonably certain and laparotomy was performed as a therapeutic measure, the immediate mortality rate was 55 per cent and the incidence of postoperative fecal fistula 35 per cent. The most frequent causes of death were shock and peritonitis. Time and again the intestinal lumen was entered before the general peritoneal cavity was reached. In other instances the separation of adhesions was associated with gross contamination. In no instance was there convincing evidence of therapeutic benefit from laparotomy which could not have been expected from bed

rest and paracentesis. In hands more skillful than those of the staff of a non-teaching general hospital, the results might not have been quite so shocking, but even so, more benefit should be demonstrated from so serious a procedure before it is advocated.

RELIEF OF PAIN FOLLOWING ANORECTAL SURGERY*

By Tom E. Smith, B.S., M.D.†
Dallas, Texas

Pain is the greatest fear of a hemorrhoidectomy candidate. In the past, pain following hemorrhoidectomy has been common, and the laity considers it universal.

Feeling that hemorrhoidectomies should be performed with less postoperative pain, the author has used an oil-soluble anesthetic agent at the time of operation for 5 years (1937 to 1942), and this paper serves as a report of that procedure.

During this period an oil-soluble anesthetic agent was injected into the perianal tissue in 552 cases; 385 cases in Baylor University Hospital and 167 cases in other Dallas hospitals. All cases were private, and accurate after-care observation was possible.

The first 250 cases in the series of 385 cases in Baylor University Hospital will be reported in detail later.

A compound‡ with the following formula was used in the entire series: 6 per cent butyn, 1.5 per cent procaine hydrochloride, 5 per cent benzyl alcohol in oil of sweet almond base. It was used in 10 to 20 c. c. amounts with most of the injections averaging 20 c. c.

In most of the cases, 10 c. c. of the anesthetic agent were injected into each ischiorectal fossa because the sensory nerve supply to the anal and perianal skin traverses the ischiorectal fossa. It is the involvement and stimulation of these nerves which account for pain following anorectal surgery. Therefore, the agent was deposited around these nerve branches. The injections were made at the close of the operation to prevent "oozing" from the tissue during surgery.

The first objection of most surgeons to the use of this agent is infection and sloughing. Through the five-year period three safety factors evolved which, in the author's opinion, prevent infection and slough if observed meticulously.

They are:

(1) Absolute sterility must be observed. The skin should be thoroughly cleansed with an antiseptic agent. The solution, syringe, and needle should be sterile and dry.

(2) Inject agent deep into ischiorectal fossa. If the agent is deposited deeply, no tension is made on the overlying skin. Ischiorectal fossa tissue is composed of anemic fat and is not so susceptible as skin to pressure necrosis. Injection into the anal musculature causes hematomata and generally results in abscess formation.

(3) Do not "pool" the agent. Experience has taught that if the agent is "filmed" out instead of deposited in a "pool" undue pressure in the fat in the ischiorectal fossa is not made, and there are no untoward sequelae. "Filming" the agent is done by using a small needle (No. 20) and infiltrating the warmed agent in "fan" style. The needle is best inserted about 4 cm. from the anal verge into the center of the fossa. The needle is placed deeply, and as the infiltration starts it is withdrawn outward with care that the agent is not deposited immediately below the skin. The needle is then rotated slightly in a "fan-shaped" arc and infiltration begun again. This procedure cannot be over-emphasized because it is probably the greatest factor in eliminating abscess and sloughing.

Patients who have developed an abscess generally require incision, but occasional spontaneous evacuation occurs. Abscess and sloughing occurred in 6 per cent, or 15 cases, in this series. Each of these healed satisfactorily without further anorectal surgery.

In selecting the cases for injection of the anesthetic agent, care was observed that no active infection existed in either the anal canal, perianal tissue or ischiorectal fossae. It is self-evident that any chemical agent infiltrated by needle into an acute infectious process would cause spread of the infection.

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*Released for publication by the War Department Manuscript Board, which assumes no responsibility, other than censorship, for the contents of this article.

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‡Zylcaine.

An analysis of the type of operation in 250 cases follows:

(1) Hemorrhoidectomy, 130 cases, or 52 per cent.

(2) Hemorrhoidectomy and ulcerectomy, 25 cases, or 10 per cent.

(3) Hemorrhoidectomy and other pathology, 41 cases, or 16 per cent.

(4) Anal ulcerectomy, 25 cases, or 10 per cent.

(5) Anal fistulectomy, 17 cases, or 7 per cent.

(6) Miscellaneous, 12 cases, or 5 per cent.

From the above it will be seen that a total of 196 cases were hemorrhoidectomies, or 78 per cent of the total. The other anorectal operations combined comprised only 54 cases, or 22 per cent of the total. This series in no way shows the ratio of one anorectal surgical procedure to another because these were picked cases which offered the least chance for postoperative complications.

Three objective criteria were used in judging whether the anesthetic agent was effective in reducing postoperative pain. They were: (1) the amount of morphine taken, (2) the amount of codeine and aspirin taken, and (3) the number of catheterizations required.

Regarding morphine taken, 155 cases, or 62 per cent of the series total, took no postoperative morphine. Of these cases 112, or 72 per cent, were hemorrhoidectomies, and 43, or 28 per cent, were other anorectal operations.

Ninety-five cases, or 38 per cent of the total, needed morphine for relief of the postoperative pain. Eighty-four cases, or 88 per cent, were hemorrhoidectomies, and these required 189 injections of ¼ grain each, or an average of 2.2 injections per patient.

Eleven cases, or 12 per cent of those requiring morphine postoperatively, had other anorectal operations, and these required 21 injections of ¼ grain each, or an average of 2 injections per patient.

Regarding the patients requiring codeine (gr. ½) and aspirin (gr. 5) for relief of mild postoperative pain only 40 cases, or 16 per cent of the total series, took none. Twenty-seven hemorrhoidectomies (67 per cent) and 13 cases (33 per cent) of other anorectal operations required no codeine and aspirin.

Two hundred ten cases, or 84 per cent, required postoperative codeine and aspirin, and of these, 169 cases (80 per cent) had hemor-

RELATIONSHIP OF OPERATION TO OPIATES AND CATHETERIZATION

			Morphine				Codeine-aspirin				Catheterization			
			Yes		No		Yes		No		Yes		No	
	Number Cases	Per Cent	Number Cases	Per Cent	Number Cases	Per Cent	Number Cases	Per Cent	Number Cases	Per Cent	Number Cases	Per Cent	Number Cases	Per Cent
Hemorrhoidectomies	196	78	84	88	112	72	169	80	27	67	93	80	103	77
Other anorectal surgery	54	22	11	12	43	28	41	20	13	33	24	20	30	23
	250		95	38	155	62	210	84	40	16	117	46	133	54

Table 1

rhoidectomies. These patients took 853 capsules, or an average of 5.2 capsules per patient during a 5-day hospital stay. Forty-one cases (20 per cent) had other anorectal surgery, and these took 281 capsules, or an average of 6.1 capsules per patient during hospitalization.

Regarding catherizations for urinary retention, 54 per cent, or 133 cases, voided spontaneously. One hundred three, or 77 per cent of this group, had hemorrhoidectomies, while 30, or 23 per cent, had other anorectal surgery. No medication such as pitressin or urotropin was used.

One hundred seventeen cases (46 per cent) required postoperative urinary catherterization for relief of bladder pain and for inability to void spontaneously while standing or sitting. Ninety-three of these (80 per cent) had hemorrhoidectomies while 24 cases (20 per cent) had other anorectal surgery.

In analyzing the above figures the following deductions present themselves:

(1) Since 62 per cent of the 250 cases required no postoperative morphine, it is logical to assume that the agent was of some aid in reducing severe after-pain.

(2) Since 38 per cent of the series required morphine for severe after-pain and 84 per cent required codeine and aspirin, it is likewise logical to assume that the agent is not perfect in relieving severe pain, but probably reduces the level of pain to tolerable limits or to mild after-pain which can be relieved by codeine and aspirin.

(3) Since 210 out of the 250 cases required an average of 5 to 6 codeine and aspirin capsules per patient during hospitalization, it should be mentioned that the agent should not be called "anesthetic," for postoperative anorectal anesthesia was not produced at any time. A series of this size should indicate to pharmaceutical manufacturers the fallacy of labeling these agents as "anesthetic agents."

(4) If the so-called anesthetic agents were really "anesthetic" it stands to reason that 46 per cent of a series of 250 cases would not have required catheterization.

Occasionally the objection is raised to use of the agent on the ground that it prolongs tissue healing. Actually this is not so, as the average healing time for the 196 hemorrhoidectomies in this series was 25 days. Two hundred other hemorrhoidectomies done by the same technic in which no agent was used also averaged 25 days for complete tissue healing.

The primary purpose of this communication was to present a detailed report of 250 consecutive cases in which an oil-soluble "anesthetic" agent was used to reduce postoperative after-pain. However, three other operative factors have been observed during this study which appear to be as important.

The first factor regards suture material. Pain can be greatly reduced following hemorrhoidectomy if only enough suture to control bleeding from the superior hemorrhoidal vessels is used. Small sized chromic sutures, preferably triple O catgut, will cause little tissue reaction in the upper anal canal and will be cast off in 2 to 5 days. It is most important that the catgut be placed well above the mucocutaneous line of the anus (dentate or pectinate line). If this is done no somatic sensory nerve ending will be "bunched up" in the suture with resulting edema which causes great pain.

The second operative factor which will cause less after-pain is the creation of drainage "slots" or "pits" from the inferior portion of the suture line at the mucocutaneous junction out through the anal and perianal skin to a distance of 2.5 cm. from the anal verge. If the edges of these "slots" are beveled off and the wounds made flat, there is practically no painful edema. It is imperative that these slots be allowed to remain open if subcutaneous abscess and fistula are to be eliminated as painful complications.

The third operative factor is the elimination of packing following anorectal surgery. Close observation of anorectal cases will reveal that one of the greatest factors in the production of postoperative pain is the placing of packing in the anal canal. This gives a solid substance for the skeletal muscle fibers of the external anal sphincter to contract upon, which creates extreme pain. No packing for hemostasis is necessary if correct suturing has been done.

The argument for inserting an anorectal pack used to be that the pack made it easier for a patient to pass flatus, but actually the opposite is true. No patient can expel flatus through the anal canal if it is plugged. Exaggerated postoperative pain can be eliminated if patients are left unplugged.

A great deal of relief from after-pain can be accomplished by the use of three time-tested postoperative procedures.

First, the operative dressing is removed in 8 to 24 hours and application of wet compresses begun: warm saline or boric acid in the winter time and witch hazel compresses in the summer

time. In the winter months an electric pad placed outside of a dry towel over the wet compresses will create enough warmth to reduce edema and external anal sphincter spasm to a minimum.

Second, if hot sitz baths are begun early and given every 3 to 4 hours during the daytime and following defecation, the patient will be greatly aided.

Third, the need for an enema should be eliminated. This can be accomplished by keeping the patient on general diet except for the morning of surgery. The general diet plus forcing of fluids, mineral oil twice daily, and early ambulation will generally give a spontaneous defecation by the third postoperative day. This elimination of the need for an enema cannot be overemphasized as an aid in reducing postoperative pain.

SUMMARY AND CONCLUSIONS

(1) Oil-soluble "anesthetic" agents are of some value in reducing severe anorectal postoperative pain, as 155 of 250 cases did not require morphine.

(2) Oil-soluble "anesthetic" agents are not anesthetic as shown by the fact that 84 cases of the 250 required morphine and 210 of the 250 required codeine and aspirin for relief of postoperative pain. These drugs should be relabeled for, in the opinion of the writer, the labels are misguiding.

(3) Healing time was not affected by the use of this agent.

(4) Three safety factors in the technic of perianal infiltration of an oil-soluble agent were outlined.

(5) Three operative factors for reducing pain following anorectal surgery were discussed.

(6) Three postoperative procedures for relief of pain were itemized.

DISCUSSION (*Abstract*)

Dr. George H. Thiele, Kansas City, Mo.—The control of postoperative pain constitutes one of our most important problems, because adequate control of postoperative pain is one of the important advances in operative proctology.

Dr. Smith has outlined three safety factors to be observed in the injection of the oil-soluble anesthetics. He has not said whether in the observance of sterility, he has made the injection immediately preceding or immediately following the operation. It has been my practice to inject these agents immediately preceding operation and before the anal canal has been entered with the finger or with a speculum. In that way one can prevent contamination of the perianal skin with feces and pus from the anal canal. It has not been my experience that injection of small amounts of the anesthetic agent into the sphincters is productive of either hematoma or abscess formation. In fact, I have for a long time made an attempt to place some of the oil-anesthetic into the substance of the external sphincter. To state that injection into the muscle produces pressure necrosis and invariably results in abscess formation, is, I think, an over-statement unless the amount of the oil-anesthetic is large. Small amounts may be carefully placed in the external sphincter without fear of these complications. The amount usually so placed is not more than about two cubic centimeters on either side and under the posterior midline. The paretic effect of these small amounts placed in the external sphincter does much to prevent postoperative muscular hypertonicity, and permits much easier defecation, quite apart from the sensory anesthetic effect of that portion of the drug which is placed farther away from the anal canal where it will come in contact with the hemorrhoidal nerves as they traverse the ischiorectal fossa.

Dr. Smith's admonition to avoid pooling of the oil is very important and should always be observed.

The essayist reports that abscess and sloughing occurred in 6 per cent of his series of two hundred and fifty cases. I believe that this figure is a little higher than it should be, and I have no explanation to offer except that possibly 10 c. c. of oil-anesthetic is too much. I believe that practically the same analgesic effect can be and is obtained by the use of only 5 c. c. on either side, including the anterior and posterior areas, the total amount used being only 10 c. c.

In the selection of cases for the injection of the anesthetic agents, I believe that we may well include those with active anal infection, such as acutely ulcerated anal fissures, the so-called anal ulcers. Our caution in these cases should be to place the agent not too close to the anal canal. Although Dr. Smith has listed acute anal infection as a contraindication for the use of these agents, he has reported their use in fifty cases of anal ulcer, in twenty-five of which he also did a hemorrhoidectomy. I believe Dr. Smith meant purulent anal infection instead of "acute anal infection." Unquestionably active infection in the perianal or ischiorectal tissues constitutes a contraindication for the use of oil-anesthetic agents.

The speaker mentioned three operative factors which contribute to the reduction of postoperative pain. I agree heartily that no ligatures should be used so closely above the anorectal line that somatic nerve branches are included in the ligature, and that postoperative packing should never be used. It has not been my experience, however, that closing the radiating perianal drainage incisions has contributed to the incidence of subcutaneous abscess and fistula. I often partially close those incisions with an interrupted suture of fine silk and have observed no ill-effects.

I am convinced that postoperative wounds will be much less painful if mineral oil is not used as a laxative, and much prefer the use of one of the karaya gum laxatives.

The fact that in Dr. Smith's series of two hundred and fifty cases only 38 per cent of the patients required morphine averaging 2.2 doses per patient, and that only 84 per cent required codeine with aspirin averaging only 5.2 doses per patient, speaks very

highly not only for the oil-anesthetic preparation employed, but even more highly for the technic and judgment with which it was used. Technical details vary with the individual proctologist, as we do not all do things in exactly the same way.

Dr. Curtice Rosser, Dallas, Tex.—Capt. Smith has stressed such details as careful suturing with small catgut, the use of adequate drainage with minimal packing and non-greasy, warm, local applications. Certainly there is no chemical substitute in surgery of this region for a properly conceived and carefully executed operative procedure and in my own work I have found that the use of such details as have been enumerated above are of prime importance in the rapid and comfortable healing of a wound.

My interest in the use of prolonged anesthetic agents began eight years ago when I reported in *Surgery, Gynecology and Obstetrics* a clinical survey of two hundred cases in which diothane, a water soluble anesthetic, had been injected alone and in conjunction with other anesthetics in non-inflammatory lesions of the anorectum. I have been interested to learn that Dr. Smith's observations record a very similar statistical result in connection with postoperative narcotics, catheterization and postoperative chemical abscess. I thoroughly agree that these agents are at the most analgesic rather than anesthetic, which, if the patient has expected complete relief of pain, is quite disappointing to all concerned.

A certain amount of postoperative edema and tag formation and the occasional occurrence of chemical abscess have reduced my own enthusiasm for routine use of agents of this kind. They are particularly helpful in office surgery and injection of fissures. In selected hospital cases, particularly anal ulcers, they are unquestionably well advised, but I am not at this time willing to consent to a massive perianal injection in all anal surgery.

Dr. Louis J. Hirschman, Detroit, Mich.—To carry a patient through an anorectal operation, with little or no after-pain, is the dream of every proctologist. While the injection of various oil and water soluble anesthetics has done much to lessen postoperative suffering, there are a few other important factors which I might mention. First, one must secure complete and perfect relaxation, whether the anesthetic be a local, caudal, or spinal one. If inhalation anesthesia is employed, it must be supplemented by local infiltration to secure perfect relaxation. We do not believe in traumatizing the sphincter by divulsion. Next, there should be a minimum of suturing and ligating, as strangulation of tissue causes pain. All wounds of the external skin should be radial to the anal aperture and tapered to a point. No packs or plugs should be inserted, as they incite peristalsis and spasm. Moist heat, in the form of hot magnesium sulfate compresses or hot sitz baths, is one of the best means for keeping patients comfortable after operation. Sedatives, whether narcotic or otherwise, should not be spared during the first few postoperative days, if local applications have not sufficed.

In operating upon the anus and rectum, one should always keep in mind that extreme gentleness in handling tissue is the most important factor in lessening postoperative discomfort.

KERATITIS DUE TO MUMPS*

By OTTO LIPPMANN, M.D.
Austin, Texas

According to modern conceptions,[1] epidemic parotitis is considered a systemic disease caused by a virus which reaches the involved organs via the blood stream. Consequently, we cannot speak of mumps "complications," but rather of mumps manifestations, since mumps can occur in remote organs without appreciable involvement of the salivary glands. The better known manifestations are in order of their frequency: orchitis, oophoritis, pancreatitis, mastitis, thyroid and thymus involvement and dacryoadenitis. Less known manifestations, such as prostatitis, bartholinitis, epididymitis, cranial neuritis, meningitis and encephalitis have been recorded. Among ocular manifestations the following conditions have been described: dacryoadenitis, conjunctivitis, scleritis, keratitis, uveitis, optic neuritis, retinitis and ocular palsies.

Keratitis is one of the rarest manifestations. Duke-Elder[2] in his textbook of ophthalmology mentions only two publications. In 1941, Danielson and Long[3] found seven cases in the entire literature and added one case of their own. These authors compared the onset, appearance and course of mumps keratitis as described by previous observers and suggested that it ought to be considered a definite clinical entity because of the uniformity of the present publications.

The corneal involvement starts within 2-11 days after the onset of the parotitic swelling with redness of the bulbus and lacrimation. Pain is absent or slight. Within a few days, an extensive and severe keratitis profunda develops, which is accompanied by marked impairment of vision. No complicating uveitis and no corneal vascularization or ulceration were seen by any author. All cases of keratitis have been unilateral. Complete recovery of the normal transparency of the cornea and of normal

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vision occurred in all cases after an impairment which lasted from 1 to 4 weeks.

Although we can recognize that this description partly fits into the general pattern of other forms of keratitis profunda, certain features of mumps keratitis characterize it as a definite clinical entity. I should like to stress a few of the differential-diagnostic signs: the opacity develops very rapidly, involves the entire cornea, reaches very high degrees of density with corresponding loss of vision and clears up within a surprisingly short time. Scars have not been observed and the prognosis can be called good.

Of course, before a keratitis can be pronounced as caused by mumps, we have to exclude other etiologies of keratitis by careful clinical and laboratory examinations. In the absence of other factors, we are justified in diagnosing a keratitis as due to mumps if there is a definite relationship of the time of onset of the two conditions. (Laboratory tests of epidemic parotitis have not yet been discovered.)

The treatment of mumps keratitis should consist of the ordinary conservative measures used in deep keratitis. Specific treatment of mumps "complications" by convalescent serum has been discussed, but, in the opinion of many authors, appears doubtful because "the virus has already become attached to the cells of the involved organ" with the onset of the symptoms. Enormous doses of serum would be necessary.

With only 8 known cases of mumps keratitis, the citation of such a condition appears valuable. The case which has come under my care confirms observations in the literature. In view of the scarce statistical material, the report is likely to help the formation of our opinion as to the clinical entity of mumps keratitis.

CASE REPORT

Mr. T. Z., a 24-year-old white man, consulted me on March 30, 1942, because of visual impairment and slight pain of his left eye. The eye trouble started on March 28, with lacrimation and burning. The patient was referred to me by his family physician, who treated a parotitis which started on March 24, and which was contracted from a fellow employee in the local post office where a mild epidemic of mumps was prevailing.

The past history was essentially negative. Examination revealed good general condition and bilaterally swollen parotides. The right eye was normal (externally, media and fundus). Left eye: normal lids. Slight conjunctival and moderate circumcorneal injection. The entire cornea was diffusely opaque, the surface epithelium was intact (no staining with fluoresceine). With oblique focal illumination, interlacing linear denser opacities could be distinguished in the uniform haze; slit-lamp examination revealed the opacities to be located in the substantia propria; no precipitates on Descemet's membrane and no vascularization could be seen. The pupil was normally wide and round, with prompt reaction to light. Only the fundus reflex could be seen due to the dense corneal opacity. Tension was normal.

v.o.d. 20/16 + 4
v.o.s. hand movements, 2 feet.

The diagnosis was deep keratitis.

Hot compresses and instillations of 1 per cent atropine and 1:3000 metaphen solutions were ordered.

Careful search of conditions which cause keratitis by the family physician and by me proved negative. [Tuberculin skin tests (Pirquet) were negative. No foci of infection were found in paranasal sinus, teeth, tonsils or elsewhere. Serologic tests for syphilis were negative.]

During the following 3 weeks a surprisingly rapid improvement of the keratitis was observed.

April 2, the pupil was well dilated. Much decreased injection and opacity, no vascularization. Vision was fingers at one foot.

April 6, further improvement was observed. Vision: fingers at eight feet.

April 8, vision was 20/200.

April 11, only slight corneal haze and a few slight opacities were discernible. Vision was 20/40.

April 15, vision was 20/25 — 3.

April 21, the cornea was nearly normal. The patient returned to his job. Atropine only once daily was prescribed.

April 28, vision was 20/20 — 4; + .25 sph. 20/20. The cornea had completely regained its transparency; the bulbus was white.

May 4, atropine instillations were discontinued.

May 18, both eyes were normal.

v.o.d. 20/16 + 4
v.o.s. 20/16 + 3

The final diagnosis was keratitis due to mumps.

CONCLUSION

Mumps is a systemic disease. Extrasalivary involvements are manifestations, not complications of mumps. Among the rare nonsalivary manifestations keratitis forms a definite clinical entity. This opinion is supported by previous descriptions in the literature and by the preceding case report. Mumps keratitis causes a corneal opacity and visual loss which appear and disappear with marked rapidity.

REFERENCES

1. Wesselhoeft, Conrad: New England Jour. Med., **226**:530, 1942.
2. Duke-Elder: Textbook of Ophthalmology, Volume 2. St. Louis: The C. V. Mosby Co., 1940.
3. Danielson, Ralph W.: and Long, John C.: Amer. Jour. Ophth., **24**:6, 1941.

BIRTH INJURY*

By T. D. YOUNG, M.D., F.A.C.S.
Roscoe, Texas

In the December issue of the *American Journal of Obstetrics and Gynecology* an unusual birth injury is described by David Findley. A hand of the fetus protruded through the rectum during labor. I have recently seen an unusual injury as follows:

Mrs. R. J., nullipara, aged 19, was first seen after she had missed menstruating for five weeks. She complained of nausea with occasional vomiting. The nausea improved between the sixth and eighth week and the pregnancy progressed normally until the fifth month, when she had a urinary obstruction. Hospitalization for seventy-two hours with fluids and sulfathiazole improved the urinary infection. Blood pressure and urinary examination at regular intervals were never abnormal. Weight gain was thirty pounds.

Her past history was essentially negative. She had had no previous pregnancies and no serious illnesses. The family history was irrelevant.

Labor began at her home on a ranch about fifteen miles from town. The first pains were about thirty minutes apart and light. She entered the hospital in good condition with pains about ten minutes apart, at 3:30 a.m. Examination revealed a thin cervix, dilated to about the size of two fingers, with a breech presentation. Attempts to cause vertex presentation by external version were unsuccessful. Labor pains increased in severity. Seconal, grains 1½, was given orally. The membranes ruptured about 4:30 a.m. and an additional 1½ grain of seconal was given. At 9:30, the contractions were much harder and of longer duration. The patient was taken to the delivery room and draped for delivery. Vaginal examination revealed a fully dilated cervix with the buttocks almost to the perineum. Chloroform inhalations were given with each contraction. No pituitrin or ergotrate had been given.

When the buttocks had descended far enough for the scrotum to be visible during each contraction, it was noticed that the sacrum was anterior. The right foot suddenly pushed through the rectal mucosa and out the rectum. The perineum was left intact. It was necessary to do a deep midline episiotomy, extending through the perineum to free the leg and deliver the child. With the leg freed and the perineum opened, there was no difficulty in delivering a normal seven-pound male infant.

The baby breathed within a short time. The cord was tied and cut, and the placenta, cord, and membranes were delivered *in toto* without difficulty. One c. c. pitocin was given intramuscularly and 1/320 grams ergotrate was given intravenously to control bleeding.

The wound was repaired by approximating the muscles in layers with No. 2 chromic catgut interrupted sutures. The mucous membranes of the vagina and the skin of the perineum were closed with chromic catgut sutures. No sutures were used in the rectal mucosa as the laceration was so near the perineum that sutures were not thought advisable. A retention catheter was placed in the bladder and the patient returned to her room in good condition.

The baby was normal, weighing an ounce less than seven pounds. All measurements were normal for a seven-pound baby. He was breast fed and had little trouble with his nursing.

The puerperium of the mother was uneventful. Following Dr. Findley's suggestions, she was placed on clear liquids for five days and a low residue diet for the remainder of her stay. A mineral oil agar mixture was given twice daily in one-ounce doses after the second day. She was given external douches of weak lysol solution after each bowel movement and the perineum was kept clean and dry at all times. The retention catheter was removed on the fifth day and voiding was satisfactory. No leg exercises were allowed for the twelve days she was in the hospital. She was discharged on the twelfth day without having had any incontinence. On the twenty-first day postpartum, she had a temperature rise to 103° and a swelling and tenderness in the left leg. Sulfanilamide was given in doses of one gram every four hours for twenty-four hours. Return examination the next day revealed no temperature and negligible swelling of the leg. The patient was kept in bed several days and then allowed to get up. The remainder of her postpartum period was uneventful.

Examination at the end of the sixth week postpartum revealed that the perineum had healed by primary union. The introitus barely admitted two fingers, and the perineum gave good support. The cervix had no laceration or erosion and the rectal sphincter was functioning properly. The left leg did not swell enough to be noticeable and the foot accommodated the same shoe worn before pregnancy.

No satisfactory explanation for this unusual occurrence has been offered. However, it is reasonable to suppose that the position of the foot and leg was such that, as the sacrum rotated under the symphysis, the pressure on the knee during a contraction tended to cause extension of the leg and thigh. When the foot pushed against the perineum, the toes acted as a cutting edge and came out through the rectum. The other foot was not in a similar position as it did not present until after delivery of the buttocks.

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M. Y. DABNEY, M.D., Editor
C. P. LORANZ, Secretary, Treasurer and General Manager

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EDITORIAL DEPARTMENT

SOUTHERN MEDICAL ASSOCIATION
Thirty-Seventh Annual Meeting
Cincinnati, Ohio, November 16-17-18, 1943

IN MEMORIAM

Dr. Lewellys Franklin Barker

Dr. Arthur Thomas McCormack

In the space of a month's time the South and the Nation have lost two distinguished physicians, both ex-presidents of the Southern Medical Association. Dr. Lewellys Franklin Barker died in Baltimore on July 13, at the age of 75; and Dr. Arthur Thomas McCormack, in Louisville, August 7, age 71. In entirely different fields, both have left deep imprints upon American medicine.

Dr. Barker served as President in 1917-19 during World War I and presided over the meeting held in Asheville in 1919. Dr. McCormack was chosen President-Elect in 1938 and presided over the meeting in Louisville in 1940.

DR. BARKER

Dr. Lewellys Franklin Barker although a Canadian by birth spent practically his entire professional life in Baltimore. Like his fellow countryman, Dr. William Osler, he was the son of a clergyman. After an A.B. at Pickering College, Ontario, in 1884, Dr. Barker next was graduated in medicine from the University of Toronto, in 1890, in the same class with Dr. Thomas S. Cullen, now Emeritus Professor of Gynecology at Johns Hopkins. It is interesting to note that on a visit to Toronto at that period, when Dr. Howard A. Kelly gave an operative clinic, Dr. Lewellys Barker administered the ether anesthesia and Dr. Thomas Cullen handed the instruments.

After finishing a year as house officer at the Toronto General Hospital, Dr. Barker went to Johns Hopkins where he served for several years in clinical medicine under Dr. Osler. Thence he was transferred to the Department of Pathology where he remained for two years with Dr. William H. Welch. The next move was as Associate in Anatomy under Dr. Franklin P. Mall from 1894 to 1897, and as Associate Professor of Anatomy till 1899. But he went back to pathology from 1899 to 1900.

From 1900 till 1905 he was Professor of Anatomy at the University of Chicago; and tradition has it that Dr. Barker spent protracted

DR. LEWELLYS FRANKLIN BARKER

leaves in Europe not in the study of anatomy but internal medicine.

In 1905, when Dr. Osler was called from Baltimore to Oxford University as Professor of Medicine and Physician to the King, he cast his mantle upon his favorite, Dr. Barker, who returned to the Hopkins as Professor of Medicine. Later on, because the chair required fulltime service, Dr. Barker became Professor of Clinical Medicine. It was a difficult task to succeed a popular idol such as Osler.

The usual array of honorary degrees and memberships in learned societies was Dr. Barker's, and requires no listing. Chiefly among his books were a translation from the German of Spalteholz's "Hand Atlas of Human Anatomy" in three volumes, a work on neuro-anatomy, and quite recently his autobiography. His papers in medical periodicals were many. Incidentally, some of the best editorials that have appeared in this JOURNAL, fifteen or twenty years ago, were written by Dr. Barker, but, as has always been the custom, were unsigned.

Dr. Barker seemed to have more than the necessary attributes that go into the creation of a great physician: a moral and cultural background, a brilliant, well-organized mind, a handsome, magnificent head, an imposing figure and bearing, a personality that was disarming, and a natural dignity that commanded respect and admiration alike from student and patient.

His mind was of a keenness that was both startling and stimulating. One marveled at his memory of facts and sources of information. He seemed to know everything that was possible to be known about everything medical. His students always felt that they were in the presence of intellectual royalty.

Barker's clinics became famous and were eagerly attended by visiting physicians from far and wide as well as by the students for whom they were primarily intended. They were events to anticipate, and have remained thrilling memories to all of those students.

At his zenith Dr. Barker was easily the most scholarly and outstanding internist in the Americas, and the only one who could dispel with appropriate brilliance the medical umbra left by Dr. Osler's departure to England. And now that Dr. Barker is dead it will be difficult to duplicate the position he once held in American medicine.

DR. McCORMACK

The death of Dr. Arthur Thomas McCormack ended what was probably the longest dynasty in public health history; for he and his father, Dr. J. N. McCormack, were the State Health Commissioners of Kentucky continuously for sixty-four years. The father had been active in reorganizing the American Medical Association, and served on the Organization Committee with Dr. George H. Simmons, of Chicago, and Dr. P. Maxwell Forshee, of Cleveland, at the St. Paul meeting in 1901, thus playing an important part in rejuvenating and reshaping the greatest of all medical organizations.

Dr. Arthur T. McCormack was born in the hills of Nelson County, Kentucky, August 21, 1872, the son of a country doctor who was destined to play an important part in public health and medical organizations. After having finished the public schools, Arthur McCormack took an A.B. degree at Ogden College in Bowling Green. Then there was further academic work at the University of Virginia. Next he was graduated from the College of Physicians and Surgeons of Columbia University with an M.D. in 1896. His interneship was served in Patter-

DR. ARTHUR THOMAS McCORMACK

son, N. J. After that he entered general practice with his father in Bowling Green in the horse and buggy era. Later he established St. Joseph's Hospital, the only hospital in those days between Louisville and Nashville.

He served as Health Officer of Warren County from 1897 till 1900, and as Assistant State Health Commissioner and Member of the State Board of Health. On the death of the elder McCormack in 1912, Dr. Arthur was elevated to the position of State Health Commissioner. He was one of the founders of the American College of Surgeons and a life member. He organized Base Hospital No. 59 in World War I but was sent to Panama for the duration of the war as Health Officer by Surgeon-General William C. Gorgas.

For many years and up until the time of his death Dr. McCormack was Secretary of the Kentucky State Medical Association and Editor of its mouth piece, the *Kentucky Medical Journal*. He was a delegate for many years to the American Medical Association, and was a member of most of the important public health and medical associations, many of which he served as president. In fact his whole life was spent in working with, and for, organized medicine.

Dr. McCormack was an indefatigable worker, but was the soul of friendliness and an extrovert to a delightful extent. He loved his fellow man and he liked the society of his friends. As a *raconteur* he had few equals and as a speaker he was in constant demand. Except when dealing with extensive statistics he was never known to refer to a note. He used to say that when he arose to speak he had not the slightest idea what he was going to say.

Arthur McCormack had a good head on his shoulders; and it carried him far and won him success. But a much greater asset was his marvelous personality and his unusual faculty of making friends and holding those friendships. Throughout the years in Kentucky, whether the state was under a Republican or Democratic rule, Arthur McCormack never failed to secure the cooperation of the administration, and thus kept the State Health Department functioning smoothly and efficiently.

As might be expected, Dr. McCormack was the recipient of a number of honorary degrees, such as A.M., Sc.D., D.P.H., and Ll.D.

Tall of stature, large of frame, with a huge head, a heavy shock of hair, a handsome face with a winning smile, and a hearty handshake, Dr. McCormack made friends and created admirers wherever he went. He was a great health officer, second to none in efficiency and in national influence. His untimely passing is a severe blow to American public health and to the thousands upon thousands who looked upon him as their personal friend.

MALIGNANT HYPERTENSION

The cause of most of the infectious diseases has been clear for more than a generation. Their treatment by specific chemicals is contemporaneous with the present generation of physicians. Whereas before 1930 the bacterial diseases which yielded to specific drugs numbered two, malaria and syphilis, those which are not amenable to sulfonamide therapy now may be counted on the fingers. The largest group of these is the viruses.

Degenerative diseases, as all life insurance statistics have shown, have increased steadily in this century with little accurate knowledge of their etiology. The experimental hypertension induced by constricting the kidney has been much studied in recent years The production of malignant hypertension in small animals by Selye and his associates[1] at McGill University is enlightening. They investigated the effects of an adrenal cortical hormone, desoxycorticosterone acetate, upon normal albino rats. If this product was administered over a period of two months, with excess of sodium chloride in the drinking water, that is, no plain water permitted, only water with 1 per cent sodium chloride added, various changes in the animals were noted. Certain nervous symptoms developed, and there was a marked diuresis. The daily urine volume rose from an average of 6 c. c. in the untreated controls to an average of 49 c. c. in the group which received the hormone,

1. Selye, Hans; Hall, E. E.; and Rowley, E. M.: Malignant Hypertension Produced by Treatment with Desoxycorticosterone Acetate. Canadian Med. Assn. Jour., **49**:88 (Aug.) 1943.

DCA, plus sodium chloride. In the group which received sodium chloride without DCA, the urine volume was also markedly elevated (28 c. c.). The hormone alone did not greatly increase the urine volume. Sodium chloride was the toxic agent, its effects markedly enhanced by simultaneous continued treatment with DCA. In the group of rats which received DCA and sodium chloride, a marked rise of both systolic and diastolic blood pressures was noted, with increased excretion of sodium chloride and severe cardiac decompensation.

Upon termination of the treatment after nearly two months, the organs of all the animals were examined. Most marked abnormalities occurred in the group which had received both DCA and sodium chloride. The kidneys were grossly abnormal, as was the adrenal capsule. The heart was markedly hypertrophied. Microscopically the kidney picture was that characteristic of clinical malignant hypertension. The glomeruli were enlarged, and there were capsular fibrosis, degeneration of the afferent glomerular arterioles, degenerating nephrons, and other changes. In the pancreas there was proliferation of the perivascular connective tissue, sclerosis between the acini and islets of Langerhans, and proliferation of the media and intima of the arterioles often to occlusion of the vascular lumen. The experimental disease, according to Selye and associates, bore a close resemblance to malignant hypertensive disease of renal origin as seen in man.

The work lends some weight to the slowly accumulating body of evidence that the degenerative diseases are secondarily of endocrine origin. The endocrine disturbance itself is primarily a nutritional disorder, either a deficiency or a superabundance of one of the ordinary mineral or organic food substances. Lack of iodine injures the thyroid. The adrenal cortex perhaps normally increases or decreases its secretion as the supply of sodium chloride varies. The depressing effect of excess saline upon blood sugar might possibly initiate an inactivation of the pancreas.

The endocrines seem to lend the body its elasticity, and keep it stable in a changing environment. If they are overtaxed over too long a period normal physiologic control may be lost.

Overactivity of the adrenal cortex would appear to have a significant place in the production of malignant hypertension.

TWENTY-FIVE YEARS AGO

From Journals of 1918

The Normal College As a Factor in the Dissemination of Public Health Knowledge in the South.[1]—"For a number of years my father was the whole Health Department of the State of Kentucky. From 1878 to 1910 he was the only official it had; and my mother and I were the only clerks. We spend more now on postage than we spent for all purposes then, but that building-up stage was necessary. I am fortunate in having lived through it, because you younger men can not know the trials and tribulations of the health officer during the age of the world when we were generally considered wholly unnecessary nuisances. In 1910, when we established various bureaus of the State Board of Health and an appropriation made it a really practical agency, we established our office in the Western Kentucky Normal School. * * * We did that designedly, looking forward to the future when we could ask the Legislature of Kentucky to give us a sufficient force to go into every home and teach every citizen the things we would like to have him know about health; and we knew it would have to come through the common school and the high school system. * * * But the thing I believe in which we have accomplished the most good in Kentucky is that we have made [public health] demonstrations before the normal school teachers."

Jerusalem.[2]—The recent laying of the foundation stone of a Hebrew University at Jerusalem reveals the true spirit of the Jewish people. From the earliest times it has been considered by the Jews a sin to live in a town in which there was no school, and now the provision, amidst a clash of arms, of means for higher education in the "place in the sun" which the British government has promised to restore to them, expresses in the most emphatic manner the high value that the Jews continue to attach to intellectual and moral development.

Commission on Trench Fever.[3]—The following conclusion was reached by the Commission * * * that trench fever is a specific infectious disease * * * the organism * * * is a filterable virus * * * transplanted naturally by the louse. * * * One of the shocks of the war has been that lousiness and the itch have had such an inning. * * * We had become clean enough, at least in this country and America, to forget the enormous capabilities of the louse. * * * "Sparrow hawks of Montagu College," as Rabelais called lice, have always been terrible pests.

1. McCormack, Arthur T.: Discussion of paper by Dr. May Farinholt Jones. South. Med. Jour., **11**:629 (Sept.) 1918.
2. Notes and Comments. Lancet, **2**:192 (Aug. 10) 1918.
3. Osler, Sir William: *Ibid.*, p. 498 (Oct. 12).

Cincinnati—Where We Meet

CINCINNATI*

Cincinnati, the Queen City, opens its doors to the Southern Medical Association for its annual meeting in November.

Visitors will find Cincinnati one of the most beautiful inland cities. The old Cincinnati lies next to the winding Ohio River; and from this early beginning, the city has spread in all directions. It is truly a city of hills. As one stands at the river bank, one sees gradually rising hills and peaks, which seem to guard the downtown area, the business district. The surrounding hills are traversed by highways and viaducts, running past houses glued to the sides of cliffs, and connecting the city proper with the various suburbs, and also uniting these hilltops into one large metropolitan area.

The business district is composed of modern stores packed closely together, interspersed with office buildings; and the entire area is towered over by two skyscrapers, the Carew Tower and the Union Central Building.

Fountain Square has always been, and is still, a center of attraction. It is an elevated, concrete esplanade, having a large bronze fountain in its center. The Tyler Davidson Memorial Fountain stands well over forty feet, and is composed of a number of bronze figures grouped about a pool of water. Streams of water flow from the outstretched hands of the central figure, and smaller jets play into the pool from a snake, a turtle, a bird, and a dolphin.

Fountain Square is the site of many displays, sponsored by various civic groups at different times. Fountain Square is a cherished memory of any visitor's tour of Cincinnati.

Carew Tower, rising 574 feet above street level, offers from its observation tower a panoramic view of the downtown city, and its friendly neighbors of northern Kentucky. The huge structure houses many stores, the Netherland Plaza Hotel, numerous office suites, the Arcade, and a spacious garage.

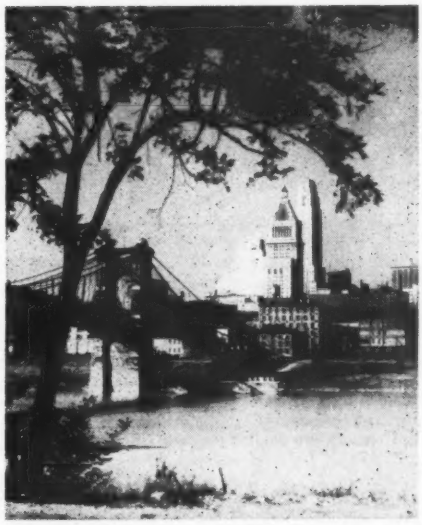
The Zoological Garden is an attraction open daily throughout the year. There are some 1,400 animals, birds and reptiles on display in this wooded park. Here one can see animals from all parts of the world, many in cages, and others in large barless grottoes. Monkey Island thrills the grownups as well as the children, who congregate about the moat. Susie, the gorilla, chimpanzees, the elephants, bears, anteaters, and animals too numerous to mention, will engage attention the better part of the day. Those interested in snakes will appreciate the reptile house.

For those who admire flowers, the Krohn Conservatory located in Eden Park is a splendid attraction. This huge green house, with its large palm garden occupying the central portion, is flanked by a large fernery, display gardens, and an orchid room. Atmospheric conditions are maintained for the various plants throughout the year.

Rookwood Pottery, known throughout the world, is manufactured near Eden Park. Until recently no design of a vase was duplicated, and its distinctive finish made it a most desirable and costly ornament.

Music has always played a most important part in the lives of Cincinnatians. The Conservatory of Music, founded in 1867, and the College of Music in 1878, have played a great part in promoting musical education and appreciation. It was here that the May Festivals had their beginning; and biennially this attraction is offered at Music Hall.

The Cincinnati Symphony Orchestra has thrilled thousands of music lovers, and has won for itself an international reputation. Cincinnati ranks high among the music-loving cities.



Skyline of Cincinnati from the Kentucky shore of the Ohio river.

The Taft Museum and the Art Academy will hold the attention of art lovers. Masterpieces of paintings, fine enamels, porcelains and crystals can be admired. Art appreciation and instruction have been acquired by thousands of Cincinnatians from these and kindred places.

Education is prominent in the everyday life of Cincinnati. Both public and parochial schools dot the city. The high schools are second to none. The University of Cincinnati is a municipal, coeducational institution, and comprises ten colleges: College of Liberal Arts, College of Commerce and Engineering, Teachers College, College of Law, College of Medicine, School of Nursing, School of Applied Arts, School of Household Administration, Evening College, and the Graduate School of Arts and Sciences.

The College of Engineering has become famous for

*Prepared for the JOURNAL by Dr. Edw. B. Mersch, Covington, Kentucky, Chairman of Publicity Committee for the Cincinnati meeting.

its origination of the cooperative system, under the able tutelage of the late Dean Herman Schneider. Under this system of work and study many famous engineers have been produced.

The College of Medicine, located in the vicinity of the Cincinnati General Hospital, is world famous. It was founded by Dr. Daniel Drake, Cincinnati's first great physician and surgeon, after many hectic difficulties. Later several schools of medicine combined to form the present College of Medicine, which for the past several decades, has always ranked as one of the better schools in the United States.

Affiliated with the Medical School is the Cincinnati General Hospital. This institute comprises 25 separate buildings and is located on a 27-acre tract. Almost 18,000 bed patients are cared for annually, in addition to a much larger number of ambulatory patients. All types of medical services are rendered. It is here that the students in the College of Medicine acquire their clinical training, both in out-patient and clinic procedures, and also in ward work. The School of Nursing trains its students in the art and practice of nursing at this great institution. Here postgraduate training in the various branches of medicine is offered young physicians.

The Children's Hospital, Tudor Gothic in style, is adjacent to the General Hospital. Here children of the rich and poor alike receive expert medical care. Allied to, and adjoining the Children's Hospital, is the Research Foundation. This institution is acclaimed the world's most complete for the study and treatment of childhood diseases. Here constant research is in progress; and the world will gain from this well developed laboratory.

Xavier University, conducted by the Jesuits, was founded in 1831. Including its evening enrollment there are about 1,500 students. Located here is the only seismograph station in the Ohio Valley. Earthquakes throughout the world are recorded, timed, and located at this station. An excellent library of over 42,000 volumes, including original manuscripts from the Fourteenth Century, are available to the students and faculty.

Industry plays a most important part in the life of the Queen City. Cincinnati has long been recognized as the leading machine tool center in the world. This industry played an important part in winning World War I, and is adding more laurels to its crown by helping to defeat the Axis in the present conflict. The machine tool industry was started in Cincinnati before the Civil War, but got its real start about 1880, when R. K. LeBlond started his tool company, and shortly afterward the Cincinnati Milling Machine Company opened its doors. These two plants are among the largest in this industry. Cincinnati contains one-fourth of all the machine tool shops in the United States.

Soap industries were started in Cincinnati before the machine tool business. Here also is located the largest soap manufacturing company in the world, the Proctor & Gamble Co., located in Ivorydale, named for its most famous product, "Ivory Soap, 99 and 44/100 per cent pure."

The American Laundry Machine Company is the world's largest producer of laundry equipment for commercial laundries, hotels, and other large institutions.

The Globe Wernicke Company, producers of office equipment, is also one of the world's largest office furniture manufacturers.

With its large German population, Cincinnati would be expected to be a beer producing center. This industry was started in the early part of the Nineteenth Century and is today a leader in its field.

The U. S. Playing Card Company, located in Norwood, adjacent to Cincinnati, is the world's largest manufacturer of playing cards. Its cards are shipped to all parts of the globe.

Cincinnati also boasts of the most powerful radio station, WLW. Through its short wave facilities, propaganda programs are daily bombarding the Axis and bolstering our Allies.

For entertainment in November there will be the Symphony, motion picture houses, the theaters, night clubs, golf and wrestling matches, all within easy reach of the downtown district by street car, bus or taxi.

These are but a few glimpses of Cincinnati, the Queen City, your host for the November meeting of the Southern Medical Association.

Book Reviews

Essentials of Industrial Health. By C. O. Sappington, M.D., Dr. P.H., Editor of *Industrial Medicine.* 626 pages with 63 illustrations. Philadelphia: J. B. Lippincott Company, 1943. Cloth $6.50.

The first third of the book gives an interesting historical background and also covers industrial health administration.

The second third will interest the industrial hygienist as it gives a graphic description of industrial exposures, the method of conducting plant surveys for the evaluation and control of health hazards and with such factors as sanitation, hygiene, water supply, noise control and health and safety.

The final third goes more into industrial medicine and surgery with a discussion of industrial accidents and their prevention. Occupational diseases are dealt with as well as non-occupational diseases. There is a complete subject index which is exceedingly helpful for reference purposes.

First Aid: Surgical and Medical. By Warren H. Cole, M.D., F.A.C.S., Professor and Head of the Department of Surgery, University of Illinois College of Medicine; and Lieutenant Colonel Charles B. Puestow, Medical Corps, Army of the United States. Second Edition. 351 pages, illustrated. New York: D. Appleton-Century Company, 1943. Cloth $3.00.

The authors have produced an excellent guide book for first aid treatment of value to practitioners and as a text in teaching first aid to various groups during war. Each subject is prefaced by introductory remarks concerning the anatomy and physiology of the organs involved. The line drawings are excellent and well suited to teaching first aid methods. Bandaging and application of dressings is carefully explained and illustrated. The recognition and treatment of shock is

adequately covered and forms a chapter often neglected even in surgical texts. The detailed description of blood transfusion technics; typings and agglutination might better have been left for texts dealing with definitive treatment rather than first aid.

The illustrations of splinting in fractures are excellent and applicable to all types of injuries of the extremities. Of particular timely interest are the charts pertaining to chemicals in warfare and articles on gas and bomb raids, emersion blast and crushing injuries. This book is more than a first aid manual. It is a complete text of recognition and treatment of those conditions, usually emergencies, before the patient can be safely transported to a hospital.

Clinical Laboratory Diagnosis. By Samuel A. Levinson, M.D., Director of Laboratories and Pathologist, Research and Educational Hospitals, Chicago, Illinois; and Robert P. MacFate, Ch.E., M.D., Ph.D., Assistant Director of Laboratories, Research and Educational Hospitals, Chicago, Illinois; Assistant Professor of Pathology, University of Illinois College of Medicine. Second edition, thoroughly revised. 980 pages, illustrated. Philadelphia: Lea & Febiger, 1943. Cloth $10.00.

This relative newcomer in the laboratory field, because of the organization and completeness of the material, promises to become a leader. There are unusually helpful sections on chemistry, water analysis, histologic technic, toxicology, bacteriology and skin tests besides the latest methods in clinical pathology. Developments in the study of virus diseases are not included, but this is true of other texts in general and clinical pathology as well. The data are conveniently condensed in outline form and there are almost 300 tables and graphs. It is believed that no other text in this field has so much or better chosen material.

Indigestion: Its Diagnosis and Management with Special Reference to Diet. By Martin E. Rehfuss, M.D., Professor of Clinical Medicine; and Sutherland M. Prevost, Lecturer in Therapeutics, Jefferson Medical College, Philadelphia. Philadelphia and London: W. B. Saunders Co., 1943.

In consequence of the war and its attendent emotional stresses, home disruptions, and economic dislocations, a widespread increase in the incidence of indigestion has been forecast, with the therapeutic burden falling in large measure upon the general practitioner. For him Dr. Rehfuss has written an excellent text on indigestion.

The author first discusses "Taking the History" and very properly emphasizes this most important and all too frequently neglected aspect of the medical examination. Then other elements in making the diagnosis are treated and in succession there follow thorough and yet, very practical, chapters on "Physical Diagnosis," "Gastric and Duodenal Analysis," "X-ray Examination" and "Gastroscopy and Gastrophotography."

The bulk of the text presents each specific type of indigestion in a separate chapter, discussing under each head diagnosis, symptomatology, etiology, and therapy; and covering indigestion resulting from such causes as nervous and functional disturbances, allergy, chronic gastritis, ulcer, malignancy, biliary tract disease, cardiovascular disease, old age and the menopause. The closing chapters of the book are devoted to materials of the diet, sections on vitamins, water and calories, and a summation of dietary principles in the management of disease.

Throughout the text the emphasis is upon therapy. While diets and prescriptions are abundantly presented, the author stresses going beyond these measures to the removal of etiologic factors and the correction of physiologic disturbances. The style is quite readable, but the manner of arrangement of the chapters results in considerable repetition of material. Specialists and research men may disagree with certain of the author's views on allergy and foci of infection as well as with some of his prescriptions, but the general practitioner, for whom Dr. Rehfuss has written, will find the work instructive and helpful.

The Hemorrhagic Diseases and the Physiology of Hemostasis. By Armand J. Quick, Ph.D., M.D., Associate Professor of Pharmacology, Marquette University School of Medicine. 340 pages. Springfield, Illinois: Charles C. Thomas, 1942. Cloth $5.00.

The most authoritative and comprehensive monograph on the hemorrhagic diseases that has been published. Chapters on the historical aspects, on thrombin, prothrombin, fibrinogen, thromboplastin, platelets, heparin, afibrinogenemia, thrombocytopenia, purpura hemorrhagica, pseudohemophilia, telangiectasia, hemophilia, avitaminosis K, and technical methods for coagulation time, bleeding time, tourniquet test, clot retraction, platelet count, prothrombin, thromboplastin, thrombin, heparin, fibrinogen, and hippuric acid test. Excellent bibliography. An omission is the use of heparin and Ringer's solution for platelet counting and the incorrect crediting to Best and associates of the discovery that heparin prevents the agglutination and disintegration of platelets. It is good to see McLean recognized for his discovery of heparin.

A Manual of Clinical Therapeutics: A Guide for Students and General Practitioners. By Windsor C. Cutting, M.D., Associated Professor of Therapeutics, Stanford University School of Medicine, San Francisco, California. 609 pages. Philadelphia and London: W. B. Saunders Co., 1943. Cloth $4.00.

After all it is treatment that brings a patient to a doctor. This fundamental fact often seems to be lost sight of in the pursuit of diagnosis, important as the latter indisputably is. In the hundreds of situations, diseases and conditions arising in the human body, it is practically impossible to remember the various remedies suitable to each. This book by Dr. Cutting furnishes this information in a comprehensive form and so arranged as to be easy of reference.

The volume itself, with a flexible cover, is attractive in makeup, the type clear and the sections well marked. The chapters of the book follow somewhat those of the usual textbooks on medicine.

After the manner of the World Almanac it furnishes tables and data on all things medical: Poisons and Antidotes, Weights and Measures, Diets, Laboratory Procedures, Federal Regulations on the Use of Drugs Methods of Removing Stains, and so on.

Brucellosis in Man and Animals. By I. Forest Huddleson, D.V.M., M.S., Ph.D., Research Professor in Bacteriology, Michigan State College. Revised edition. 379 pages, illustrated. New York: The Commonwealth Fund, 1943. Cloth $3.50.

The increasing importance of brucellosis is borne out by this revision of Huddleson's book. Authoritative chapters on the genus Brucella, on the methods of isolating Brucella and on the differentiation of the various species are given in detail. Approximately 125 pages are devoted to the laboratory diagnosis of brucellosis, including detailed culture methods for the isolation of Brucella, method of guinea pig inoculation, the agglutination test in man and animals, the brucellergen skin test, the opsonocytophagic test and an analysis of the blood picture in man and animals. There are chapters on the clinical features of brucellosis in animals and in man by Hardy and Debono, a chapter by Giltner on the control or eradication of sources of brucellosis infection, an appendix containing selected case reports and a bibliography of 485 items. (The monograph by Harris is omitted).

Clinical Significance of the Blood in Tuberculosis. By Gulli Lindh Muller, M.D., Pathologist and Director of Laboratory, New England Hospital for Women and Children, Boston. 516 pages. New York: The Commonwealth Fund, 1943. Cloth $3.50.

Pulmonary tuberculosis as it reflects itself in blood changes is thoroughly considered in the light of modern hematology. This book represents an enormous amount of laboratory and statistical work, as evidenced by almost seven thousand examinations on over one thousand consecutive cases. The blood and each of its component parts as affected by the different stages of tuberculosis are clearly presented. Considerable space is given to the importance and sensitivity of the blood sedimentation rate. This book brings forcibly to one's attention the great value of careful blood studies in the diagnosis and treatment of pulmonary tuberculosis.

Transurethral Prostatectomy. By Reed M. Nesbit, M.D., F.A.C.S., Associate Professor of Surgery, University of Michigan Medical School, in charge of the Section of Urology, Department of Surgery. 192 pages, illustrated. Springfield, Illinois: Charles C. Thomas, Publisher, 1943. Cloth $7.50.

While this book is brief it is descriptive of the technic and management of prostatism by transurethral resection as employed by Dr. Nesbit.

Transurethral treatment of prostatism gives excellent results if the resection is correctly done. Poor results and increased morbidity and mortality follow poorly done resections. Frequently poor results are due to an incorrect technic and until the underlying principles concerning prostatic resection are understood the results can never be satisfactory. Those who are not achieving the results they desire should read this book. They will find an answer to the numerous questions that arise. There are excellent chapters on the diagnoses of prostatism, selection of operation, anesthesia, pre- and postoperative care, the technic of the operation, complications following the operation and treatment of cancer of the prostate. Numerous excellent illustrations by Wm. P. Didusch graphically show the different steps of the operation.

Southern Medical News

ALABAMA

Medical College of **Alabama, to operate** as a part of the University of Alabama, University, will be established under bill recently signed by the Governor which appropriates a million dollars for land, buildings and equipment, and $366,750 for each of the fiscal years ending September 30, 1944, and September 30, 1945. The bill provides that the Board of Trustees of the University of Alabama is authorized to establish a scholarship for each county in the state in the amount of $400 a year for the benefit of one resident of each county, payable from the annual state appropriation to the School of Medicine.

DEATHS

Dr. Lee L. Armistead, Campbell, aged 78, died recently of coronary thrombosis and arteriosclerosis.

Dr. Jackson Tucker Brown, Ragland, aged 77, died recently.

Dr. James Thomas Gaines, Crossville, aged 54, died recently of coronary thrombosis.

ARKANSAS

Union County Medical Society has elected Dr. D. E. White, El Dorado, President; Dr. P. H. Muse, Junction City, Vice-President; and Dr. M. V. Russell, El Dorado, Secretary-Treasurer.

Dr B. L. Bailey, Star City, has moved to Sterlington, Louisiana.

Dr. L. H. McDaniel, Tyronza, has been elected Membership Chairman of the local American Legion Post.

Dr. A. D. Cathey, El Dorado, has been elected Surgeon of the Local American Legion Post.

Dr. E. J. Horner, Jonesboro, has been elected Surgeon of the local American Legion Post.

Dr. Clyde McNeil, Rogers, has been elected Surgeon of the local American Legion Post.

Dr. B. H. Hawkins, Mena, has been elected Surgeon of the local American Legion Post.

Dr. Alan A. Gilbert, Fayette, has been elected for the fifth consecutive term as Chairman of the Washington County Chapter, American Red Cross.

Dr. W. E. Gray, Hot Springs National Park, has passed examination as a diplomate of the American Board of Radiology.

Dr. B. L. Moore, El Dorado, and Miss Mary Athlene West were married recently.

Dr. William L. Bunch, Jr., and Miss Lucile Stevens, both of Fayette, were married recently.

DEATHS

Dr. Tilden Paul Fowler, Harrison, aged 66, died recently.

Dr. Charles William Martin, Hot Springs National Park, aged 69, died recently of myocarditis and cardiovascular syndrome.

Dr. Russell Aubrey Smith, Brewton, aged 68, died recently of carcinoma of the rectum.

Dr. Anderson Watkins, Little Rock, aged 66, died recently of arteriosclerotic heart disease.

DISTRICT OF COLUMBIA

The Loren B. T. Johnson Memorial Fund of $25,000 has been established by Mrs. David S. Barry, Jr., in honor of her father to be used for "the intensive and specialized care and treatment of children in connection with the special objectives of the Washington Institute of Mental Hygiene." Dr. Johnson, who died in December, 1941, helped organize the Washington Child Guidance Clinic and the Life Adjustment Center which were later merged to form the Washington Institute of Mental Hygiene, now supported by Community Chest funds. Dr. Winfred Overholser, Washington, succeeded the late Dr. Johnson as President of the Mental Hygiene Institute.

Doctors Hospital, Washington, has completed a campaign to raise $100,000 in War Bonds and Stamps for the purpose of dedicating a fighting plane in memory of the late Dr. Henry Ringness, Lieutenant, Medical Cerps, USNR, former Resident Physician, who was killed in action fighting on Guadalcanal, October 17, 1942. The widow of Dr. Ringness was presented a picture of the plane by the Treasury Department.

Dr. William J. C. Agney, Captain, U. S. Navy, Washington, and Dr. Warren F. Draper, Assistant Surgeon General, U. S.

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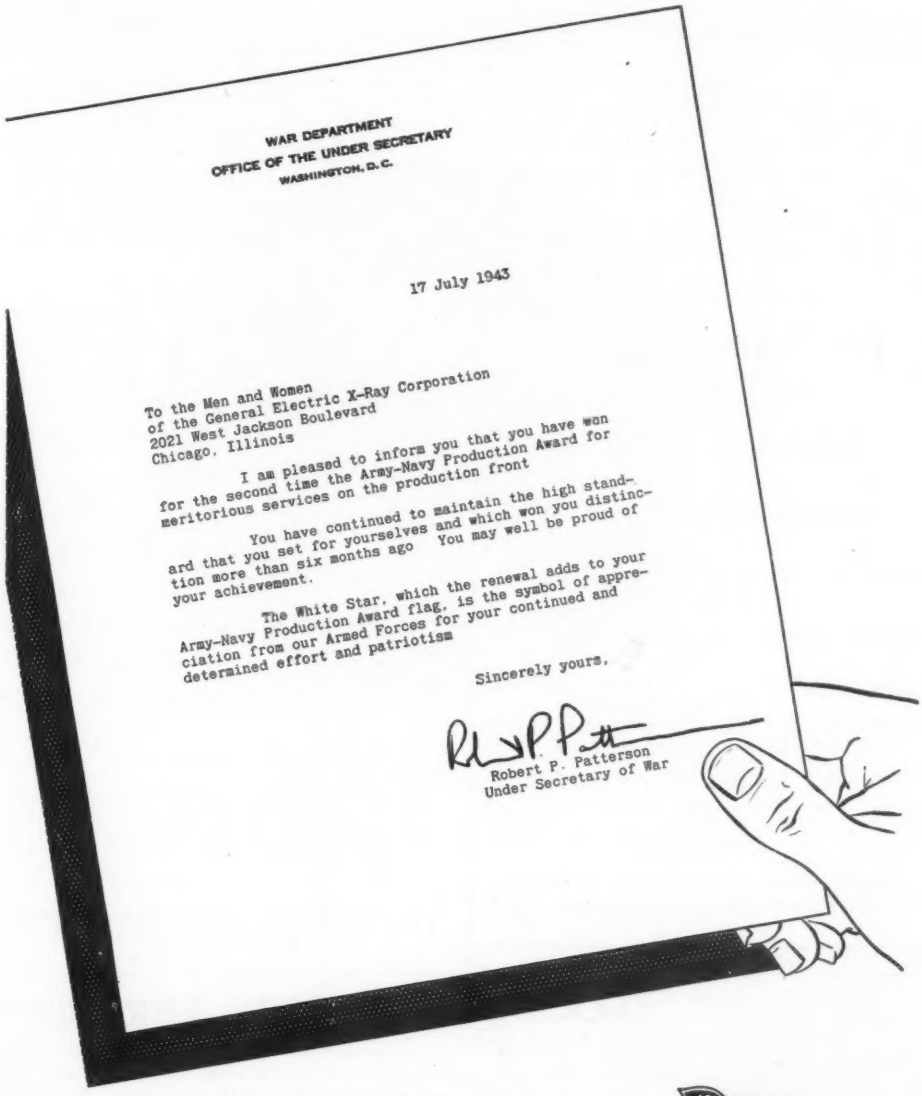
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OFFICE OF THE UNDER SECRETARY
WASHINGTON, D. C.
17 July 1943
To the Men and Women
of the General Electric X-Ray Corporation
2021 West Jackson Boulevard
Chicago, Illinois
I am pleased to inform you that you have won for the second time the Army-Navy Production Award for meritorious services on the production front
You have continued to maintain the high standard that you set for yourselves and which won you distinction more than six months ago You may well be proud of your achievement.
The White Star, which the renewal adds to your Army-Navy Production Award flag, is the symbol of appreciation from our Armed Forces for your continued and determined effort and patriotism
Sincerely yours,
Robert P. Patterson
Under Secretary of War

G-E STANDARDS ARE SET UP TO BE MAINTAINED — IN WAR AND IN PEACE

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GENERAL ELECTRIC
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Today's Best Buy — U. S. War Bonds

Continued from page 664

Public Health Service, Washington, have been appointed members of the American Medical Association's Committee on Postwar Planning.

DEATHS

Dr. Samuel Lee Battles, Washington, aged 71, died recently of cerebral hemorrhage.

Dr. Larkin White Glazebrook, Washington, aged 76, died recently.

Dr. James Morgan Minter, Washington (Medical Director, Rear Admiral, U. S. Navy) aged 61, died recently of arteriosclerotic coronary heart disease.

Dr. Sofie A. Nordhoff-Jung, Washington, aged 76, died recently.

Dr. William Sawyer Newell, Washington, aged 69, died recently.

Dr. John S. Ziegler, Washington, aged 84, died recently.

The Tulane University of Louisiana

School of Medicine

POSTGRADUATE COURSES:

SURGERY	October 4-9, 1943 February, 1944 June, 1944
PEDIATRICS	October 25-28, 1943 January, 1944 May, 1944
MEDICINE	November 1-6, 1943 March, 1944
OBSTETRICS AND GYNECOLOGY	December 13-17, 1943 April, 1944

For detailed information write

DIRECTOR

Department of Graduate Medicine
1430 Tulane Ave., New Orleans, La.

FLORIDA

Army Air Forces Regional Station Hospital, formerly Miami Biltmore Hotel at Coral Gables, has 1,200 beds with a staff of 41 doctors and 80 nurses on duty. Ten floors of the skyscraper building are in use.

Dr. Henry L. Watson, Tampa, and Miss Tallulah Josephine Newman, Woodruff, South Carolina, were married recently.

DEATHS

Dr. Ray Wellborn Blackmar, Jacksonville, aged 55, died recently.

Dr. Julian C. Chandler, Tampa, aged 65, died recently.

Dr. Oscar George Finkle, Coral Gables, aged 55, died recently of gastrointestinal hemorrhage and duodenal ulcer.

Dr. William James O'Malley, Miami, aged 58, died recently.

GEORGIA

Finney General Hospital, U. S. Army, Thomasville, 1,800-bed hospital of the cantonment type, was recently formally opened. The commanding officer is Dr. Samuel M. Browne, Colonel, Anderson, South Carolina; and the executive officer is Dr. James T. McGibony, Lieutenant Colonel, Greensboro. The hospital was named in honor of the late Brig. Gen. John Miller Turpin Finney, one of America's most distinguished surgeons who was Clinical Professor of Surgery, Johns Hopkins School of Medicine when he went abroad in 1917 as Commanding Officer of Base Hospital No. 18 and was appointed Director of Surgery for the American Expeditionary Forces.

Dr. C. Mark Whitehead, Greenville, has moved to LaGrange to be associated in practice with Dr. W. H. Clark.

Dr. E. J. Whelan, Savannah, has been elected Chatham County Physician by the County Board of Public Welfare.

Dr. Malcolm P. Mullen, Atlanta, announces the removal of his office to 478 Peachtree Street, N.E., with practice limited to internal medicine.

Dr. J. A. Corry, Barnesville, has been appointed Colonel on the official staff of the Governor.

Dr. Jefferson Eugene Morris, Moultrie, and Miss Roberta E. Haggerty, were married recently.

Dr. James Ballew, Americus, and Miss Martha Maxine Elliott, Atlanta, were married recently.

Dr. J. Harry Duncan, Hazlehurst, and Miss Mary Jane Martin, Union City, Tennessee, were married recently.

DEATHS

Dr. Benjamin F. Akin, Jackson, aged 74, died recently of heart disease.

Dr. William Troy Bivins, Jr., Atlanta, aged 36, died recently.

Dr. Wiley Calvin Kennedy, Talmo, aged 71, died recently.

Dr. William T. Kimsey, Blairsville, aged 70, died recently.

Dr. Windon Joseph Long, Townsend, aged 68, died recently of cardiovascular disease.

Dr. Marvin Wilson McLarty, Atlanta, aged 64, died recently of heart disease.

Dr. Simon Harris Smith, Atlanta, aged 41, died recently.

Continued on page 52

LaMOTTE BLOOD CHEMISTRY SERVICE

DETERMINING VITAMIN C

(Ascorbic Acid)

The new LaMotte Outfit employs 2-6 Dichlorophenol Indophenol in handy tablet form, two prepared color standards covering the high and low values, together with necessary pipettes and reagents. This test is designed for the quick and efficient analysis of Vitamin C in fasting blood on patients, within the wide range of 0.5 mg. to 1.8 mg. per 100 cc.

A larger outfit is available which combines blood and urine tests and can be used on other materials such as vegetables and fruits.

This Service includes a series of similar outfits for conducting the following accurate tests: Blood Sugar, Icterus Index, Phenolsulphonphthalein, Urine pH, Sulfanilamide, Sulfapyridine, Sulfathiazole, Sulfaguanidine and Sulfadiazine, Blood pH, Gastric Acidity, Calcium-Phosphorus, Blood Bromides, Blood Proteins, Urinalysis.

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Radiography *of the Sinuses*

THE paranasal sinuses are significant pathologically, not only because of the high incidence of sinus disease itself, but also because these pneumatic structures can be points of origin of many serious complications, among them mastoiditis, asthma, bronchiectasis, arthritis, and tuberculosis. When sinus infection is suspected there is, therefore, a double reason for the careful coordination of all available diagnostic means. Among these, radiographs, with their tangible, visible evidence, today hold a position of unquestionable importance. Eastman Kodak Company, Rochester, N. Y.

Kodak

World's largest manufacturer of radiographic and photographic materials

Refer your patients to a competent radiologist

Continued from page 50

KENTUCKY

Dr. Irvin Abell, Louisville, has been appointed a member of the Board of Trustees of the Southern Medical Association to fill the unexpired term of Dr. Arthur T. McCormack, Louisville, deceased, the appointment having been recently announced by the President, Dr. Harvey F. Garrison, Jackson, Mississippi. The Trustees are past presidents. The president when retiring from that office is elected to the Board of Trustees where he serves for six years. Dr. Abell was President of the Southern Medical Association 1932-1933 and a member of its Board of Trustees 1933-1939.

Dr. Fred W. Rankin, Lexington, Brigadier General, Medical Corps, U. S. Army, Office of the Surgeon General, Washington, has been appointed a member of the American Medical Association's Committee on Postwar Planning.

Dr. Virgil E. Simpson and Miss Della Aldridge, both of Louisville, were married recently.

Dr. Alvin B. Ortner announces the opening of his office at 905-06 Brown Building, Louisville, with practice limited to surgery.

Dr. James L. Lewis, formerly with U. S. Veterans Hospital, Hines, Illinois, has been named Superintendent, Warren County Tuberculosis Sanatorium, succeeding Dr. John P. Wheeler, who resigned to accept a place with an Indiana sanatorium.

DEATHS

Dr. Arthur T. McCormack, Louisville, aged 71, died August 14, of an acute heart attack.

Dr. Della Hertzsch, Louisville, aged 85, died recently.

Dr. J. Henry Heuser, Louisville, aged 71, died July 1.

Dr. U. G. Holloway, Versailles, aged 90, died July 14.

Dr. David Yandell Keith, Louisville, aged 62, died recently.

Dr. Preston Jennings Jones, Oneida, aged 62, died recently of pneumonia.

Dr. Meritt Chesteen Brumley, Jeffersontown, aged 80, died recently of nephritis.

Dr. Isaac Dix Winston, Sturgis, aged 68, died recently.

LOUISIANA

Dr. Lucien A. LeDoux, New Orleans, who has been a member of the Journal Committee of the Louisiana State Medical Society for several years, was recently elected Chairman of the Committee. The Journal Committee of the State Society is responsible for the publication of the state journal, the *New Orleans Medical and Surgical Journal*.

Dr. Ernest Carroll Faust, Professor of Parasitology and Acting Head, Department of Tropical Medicine, Tulane University of Louisiana School of Medicine, New Orleans, was recently awarded the Alvarenga Prize for his "outstanding contribution to our knowledge of parasitology and tropical medicine." This prize was established by the will of Pedro Francisco Da Costa Alvarenga of Lisbon, Portugal, an associate fellow of the College of Physicians, to be awarded annually by the College of Physicians on each anniversary of the death of testator, July 14, 1833, to the author of the best memorial on any branch of medicine which may be deemed worthy of the prize.

Dr. Leslie L. Lumsden, New Orleans, has been made Lecturer in Epidemiology, University of Texas Medical Branch, Galveston.

Dr. B. Bernard Weinstein, Instructor in Gross Anatomy and Gynecology, Tulane University of Louisiana School of Medicine, New Orleans, has presented to the University one of the largest postage stamp collections in the country.

Dr. Erwin E. Nelson, since 1937 Professor and head of the Department of Pharmacology, Tulane University of Louisiana School of Medicine, New Orleans, has been appointed Director of Research, Burroughs, Wellcome & Company, New York, New York.

Dr. J. R. Schenken, head of the Department of Pathology and Bacteriology, Louisiana State University School of Medicine, New Orleans, was elected a member of the Board of Censors, American Society for Clinical Pathologists at its recent meeting in Chicago.

Dr. George Haik, Major, Medical Corps, U. S. Army, New Orleans, has been assigned to Harvard Medical School where he will take a special course in plastic surgery of the eye.

Dr. David C. Elliott, Surgeon, U. S. Public Health Service,

Continued on page 54

The New Emmert-Gellhorn Pessary

An improved device for treatment of inoperable uterine prolapse

For use in cases of inoperable uterine prolapse, this new pessary is offered as an improvement upon the well-known Gellhorn Pessary, long used with great success. The Emmert-Gellhorn Pessary is made of one solid piece of Neicomold, a synthetic material that may be boiled. The material is unbreakable and stays smooth in use since it is unaffected by the genital secretions. Neither does it affect or irritate the vaginal mucosa. The shape is approximately that of a mushroom, with the upper surface slightly depressed.

Instead of a solid stem, the Emmert-Gellhorn Pessary employs a stem having a hole drilled throughout its length. This offers the considerable advantage of drainage, preventing accumulation of dammed-up secretions. This permits fewer removals of the pessary for cleaning, of great benfit to the patient, particularly since many of those using this pessary are aged and find such frequent manipulation and visits to the physician a severe handicap.

The stem of the new pessary is ¼ inch shorter than that of the former pattern, and does not terminate in the knob formerly used. A slight hollowing of the stem near the end, however, allows easy grasp for removal. In weight, the Emmert-Gellhorn Pessary has the advantage of being considerably lighter. This decreased weight also adds to the comfort of the patient.

PRICE—JE5162 — Emmert-Gellhorn Pessary, Diameter 2 or 2½ inches, STATE SIZE, Each $2.25

SPECIAL SIZES: 2¼, 2¾ or 3-inch may be had on order, at each $2.75

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DU PONT

Patterson Screens *Light the paths of X-Ray*

BETTER THINGS FOR BETTER LIVING . . . **THROUGH CHEMISTRY**

Continued from page 52

has been relieved from duty in New Orleans and sent to Savannah, Georgia.

Dr. Edgar M. Scott, Jr., Passed Assistant Surgeon, U. S. Public Health Service, has been relieved from duty in New Orleans and sent to Ketchikan, Alaska.

Dr. Charles E. Allen, Surgeon, U. S. Public Health Service, has been relieved of duty in Atlanta, Georgia, and sent to District 4, New Orleans.

Dr. Melvin E. Griffith, U. S. Public Health Service, has been relieved of duty in New Orleans and directed to proceed to Oklahoma City, Oklahoma.

MARYLAND

Dr. Erik G. Hakansson, Captain, Medical Corps, U. S. Navy, assumed command of the Naval Medical Research Institute, Bethesda, July 17, succeeding Rear Admiral William L. Mann, Medical Corps, U. S. Navy, a newly appointed medical officer for the Thirteenth Naval District.

Dr. Thomas A. Hedrick, Baltimore, and Miss Jane Miller Heuse were married recently.

Deaths

Dr. Lewellys Franklin Barker, Baltimore, aged 75, died July 13.

Dr. Harry Whitney Wheaton, Baltimore, aged 51, died recently of acute circulatory collapse following spinal anesthesia.

MISSISSIPPI

Dr. James B. Looper, Professor of Anatomy, University of Mississippi School of Medicine, University, has been appointed Assistant Dean of the School.

Dr. R. F. Annis, formerly of Biloxi and Wiggins, has acquired the equipment and office of the late Dr. B. T. Robinson, New Augusta, for practice of medicine there.

Dr. James C. Green, Lieutenant, Medical Corps, U. S. Army, formerly of Tupelo, is now stationed in a medical and surgical center composed of six large hospitals in North Africa.

Dr. Julian E. Boggess, Jr., Macon, has been reported a prisoner of war in Germany.

Deaths

Dr. R. J. Brown, Iuka, aged 66, died recently.

Dr. Charles P. Garraway, Laurel, died recently.

Dr. Robert Daric Kirk, Baldwyn, 84, died recently of coronary thrombosis.

Dr. Lonnie B. Moseley, Jackson, aged 41, died July 6 of a heart attack.

MISSOURI

Newton County Health Unit has moved into new quarters at Neosho, a building constructed by the Federal government. Dr. Donald Campbell, head of the health unit, has an office in the building.

Dr. J. M. Jenkins, St. Charles, has been appointed City Physician for a term of one year, succeeding the late Dr. A. A. Gossow.

Dr. Herbert S. Breyfogle, a fellow in legal medicine, Harvard Medical School, Boston, Massachusetts, has been appointed Instructor in Pathology, Washington University School of Medicine and Pathologist to the St. Louis City Hospital. He will serve also as Pathologist to the Coroner of St. Louis County.

Dr. Joseph C. Manning, Jr., Savannah, and Miss Helen Elizabeth McDougle, Rochester, Indiana, were married recently.

Deaths

Dr. John Barstow Coryell, St. Louis, aged 74, died recently.

Dr. Ezra C. Grim, Kirksville, aged 69, died recently.

Dr. Fred Le Grande Gibbs, St. Louis, aged 52, died recently.

Dr. Edward Everett Higdon, Fredericktown, aged 73, died recently.

Dr. Guy Kendall, Chilhowee, aged 65, died recently.

Continued on page 56

Cholmodin
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Corrects Habitual Constipation on a Physiologic Basis

Unlike virtually all cathartics which act on the colon exclusively, Cholmodin exerts its influence on the entire bowel — both the small and the large intestines. It therefore corrects habitual constipation on a physiologic basis, overcoming stasis in the jejunum and ileum as well as in the colon. This desirable behavior of Cholmodin is due to its two active ingredients — deoxycholic acid and extract of aloes. The bile salt stimulates peristalsis in the jejunum and ileum, an action further intensified by the choleretic influence of deoxycholic acid. Extract of aloes exerts its stimulating influence on the large bowel; its latent period is considerably shortened by the presence of deoxycholic acid. Cholmodin produces excellent results in atonic constipation, particularly in the obese and in the aged. It may be taken over prolonged periods without fear of habituation.

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The amount of KARO prescribed is 6 to 8% of the total quantity of milk used in the formula—one ounce of KARO in the newborn's formula is gradually increased to two ounces at six months.

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Continued from page 54

Dr. Edward J. Martens, St. Louis, aged 73, died recently of heart disease.

Dr. Charles S. Newlon, Kansas City, aged 86, died recently.

Dr. Thomas J. Redmond, St. Joseph, aged 69, died recently.

Dr. John Smith Sayers, Springfield, aged 71, died recently.

Dr. John H. Simon, St. Louis, aged 74, died recently.

NORTH CAROLINA

North Carolina State Board of Health has accepted an offer of $210,000 annually made through the Federal Works Agency to establish in Charlotte a hospital for the intensive treatment of venereal diseases in the early stages. The Charlotte Sanatorium will be used for this purpose, accommodating about 200 patients at one time. The U. S. Public Health Service will provide a chief medical officer, chief nurse and a record analyst. The Zachary Smith Reynolds Foundation has given $25,000 to the Board to be used in establishing a closer administrative supervision throughout the state.

Dr. William deB. MacNider, Kenan Research Professor of Pharmacology and head of the Department, University of North Carolina School of Medicine, Chapel Hill, relinquished his responsibilities as head of the Department on September 1. He will continue in the Department as Research Professor.

Dr. Grant L. Donelly, Associate Professor of Pharmacology, University of North Carolina School of Medicine, Chapel Hill, has resigned in order to resume the practice of medicine.

Dr. Tom A. Williams, formerly of Washington, D. C., is now located in Asheville where he is directing the City Clinic for Mental Hygiene.

Dr. Edward S. Miller, Captain, Medical Corps, A. U. S., formerly of Murphy, has recently been reported a prisoner of war of the Japanese government in the Philippine Islands.

Dr. Julian Carr Lentz, Jr., Durham, and Miss Mary Nell Lee, Maryville, were married recently.

Dr. Russell Peyton Harris, Jr., Newell, and Miss Bernice Carolyn Carter, Asheville, were married recently.

Dr. Frederick George Kroncke, Roanoke Rapids, and Miss Jeannette Valentine, New York City, were married recently.

DEATHS

Dr. William Anderson Black, Asheville, aged 88, died recently of pneumonia.

Dr. Walter Jackson Lackey, Fallston, aged 36, died recently.

Dr. Wiley C. Johnson, Canton, aged 56, died recently.

Dr. James O. Matthews, Clinton, aged 75, died recently.

OKLAHOMA

Dr. John Walter Barnard has been appointed Research Fellow in Anatomy, University of Oklahoma School of Medicine, Oklahoma City, October 1 to December 1. On January 1, 1944, he will occupy the position of Assistant Professor of Anatomy.

Dr. Kenneth M. Richter, who has been serving since 1939 as Research Fellow in Pathology, University of Oklahoma School of Medicine, Oklahoma City, has been appointed Assistant Professor of Histology and Embryology.

Dr. Jack Louis Valin, formerly of University of Cincinnati College of Medicine, has been appointed Assistant Professor of Anesthesiology, University of Oklahoma School of Medicine, Oklahoma City.

Dr. Dwight M. Young, Colonel, Medical Corps, U. S. Army, Kingfisher, is Surgeon of the Air Forces in Alaska.

Dr. C. M. Bloss, Captain, Medical Corps, U. S. Army, Okemah, is stationed at Camp Livingston, Louisiana.

Dr. James H. Hammonds, Lieutenant Colonel, Medical Corps, U. S. Army, Tulsa, has been assigned to Boling Field, Washington, D. C., where he will be in charge of the high altitude tests for the Army Air Forces.

Dr. John W. Records, Major, Medical Corps, U. S. Army, formerly of Oklahoma City, is now an instructor at the Medical Field Service School, Carlisle Barracks, Pennsylvania.

Dr. Cole D. Pittman, Major, Medical Corps, U. S. Army, formerly of Tulsa, is stationed at Rosecrans Field, St. Joseph, Missouri.

Dr. John O. Bradshaw, Major, Medical Corps, U. S. Army, formerly of Welch, is Surgeon of the Station Hospital, Camp Monticello, Arkansas.

Continued on page 58

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D-10

Continued from page 56

DEATHS

Dr. Frederick Charles Brown, Sparks, aged 71, died recently.

Dr. Ulysses Simpson Cordell, Macomb, 74, died recently of myocarditis.

Dr. John A. Eichling, Gore, aged 72, died recently of heart disease.

Dr. John David Pate, Duncan, aged 75, died recently.

SOUTH CAROLINA

Florence County Crippled Children's Home, Florence, was on July 1, formally transferred to state ownership and under state management the unit will be known as the South Carolina Crippled Children's Convalescent Home. The home will be operated under the direction of Dr. George S. T. Peeples, Columbia.

Dr. Francis B. Johnson, Professor of Clinical Pathology, Medical College of the State of South Carolina, has been conducting a training school for laboratory technicians.

A bust of Dr. F. H. McLeod, Florence, was unveiled recently at the McLeod Infirmary. The bust is a gift to the institution from Dr. James McLeod.

Medical College of South Carolina will have a Founder's Day refresher course on November 3-4.

Dr. Leadon Hyer, Darlington, is now associated with the Charleston County Health Department.

Dr. O. B. Mayer, Columbia, has been ordered to Vancouver, Washington, to be Medical Director of a large base hospital.

Dr. B. M. Montgomery, Kingstree, has been made Director, Clarendon County Health Unit, replacing Dr. Alex Heise, who is now Director of the combined Sumter County and City Health Department. Dr. Montgomery is Director of Williamsburg County but will devote two days a week to this office.

Dr. Martin B. Woodward, Registrar, State Board of Health, Columbia, has been named Director, Bureau of Vital Statistics in West Virginia.

Dr. G. Preston Cone, Williston, has opened an office in Orangeburg.

Dr. J. P. Booker, formerly of Walhalla, and also an ex-General Hospital interne, is on foreign duty.

Dr. Hugh Cathcart, Charleston, and Miss Marguerite McDonnell were married recently.

Dr. Richard Culler Horger, Eutawville, Lieutenant (jg), Medical Corps, U. S. Navy, and Miss Mary Elizabeth Smith, Savannah, Georgia, were married recently.

Dr. Albert B. Wolfe, Orangeburg, and Miss Anna Lou Black, Bowman, were married recently.

DEATHS

Dr. J. W. Bell, Walhalla, aged 76, died July 14.

Dr. John Vernon Eaves, Gaffney, aged 75, died recently.

Dr. Kirby Knapp Bryant, Charleston, aged 48, died recently while in military service.

TENNESSEE

Dr. Harrison H. Shoulders, Nashville, has been appointed a member of the American Medical Association's Committee on Postwar Planning.

Dr. Harcourt A. Morgan, Jr., Lewisburg, head of the Bedford County Health Unit, has been placed in charge of a seven-county area including the six adjacent counties of Grundy, Franklin, Warren, Bedford, Marshall, Moore and Coffee, with headquarters at Manchester.

Dr. Chester A. Hicks, Elizabethton, Director of the health unit of Carter, Johnson and Unicoi counties, has resigned to become Director of Health of the city of New Rochelle, New York.

Dr. Ethel Walker announces the opening of an office at 3415 West End Avenue, Nashville, with practice limited to pediatrics.

Dr. A. K. Morris, Captain, Medical Corps, U. S. Army, Fork Mountain, is with the 34th Portable Surgical Hospital, Fort Jackson, South Carolina.

Continued on page 60

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A new organic salt with the high calcium ratio—1 Ca : 2 Br
Less danger of bromism — Palatable — Well tolerated

EFFERVESCENT TABLETS: Tins - 10 and 50
GRANULES (non-effervescent): Tins - 100 and 500 Gm.
AMPULES: 10 cc.
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even by fasting stomachs
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SYDNEY, AUSTRALIA AUCKLAND, NEW ZEALAND

Continued from page 58

Dr. Julian K. Welch, Jr., Captain, Medical Corps, U. S. Army, Memphis, is now overseas.

Dr. George Turner Howard, Jr., Knoxville, and Miss Joan Lucey, Forest Hills, New York, were married recently.

Dr. James N. Proffitt, Nashville, and Miss Ruth Elizabeth Goddard, Alcoa, were married recently.

Deaths

Dr. Benton Burkhart Mitchell, Captain, Medical Corps, U. S. Army, Fountain City, aged 44, died recently.

Dr. James Wallace Summers, Murfreesboro, aged 74, died recently of heart disease.

TEXAS

Ashburn General Hospital, McKinney, was dedicated August 12.

Texas Surgical Society will meet October 4-5 at Dallas. Dr. T. H. Thomason, Fort Worth, is President, and Dr. Walter G. Stuck, San Antonio, is Secretary.

Fort Worth Eye, Ear, Nose and Throat Society at a recent annual meeting installed Dr. Rex Howard, President, and elected Dr. Van D. Rothgeber, President-Elect; and Dr. R. H. Gough, Secretary-Treasurer.

Dr. E. H. Cary, Dallas, has been elected President of the Group Hospital Service, Incorporated, of Texas, to fill the vacancy created by the death of Dr. J. H. Groseclose. This organization with a membership of 80,000 has accumulated a surplus of $60,000 and in less than four years has paid $1,500,000 for hospital care for the people of Texas.

University of Texas School of Medicine, Galveston, began with the semester July 5 the military medical training program under Army and Navy Auspices.

Texas State Department of Health is now located in its new building at Austin, the structure made possible by a grant of $135,105 from the Federal government and $87,500 from the state of Texas. The Department of Health is under the direct supervision of the State Health Officer, Dr. George W. Cox.

Dr. Dwight M. Deter, Lieutenant Colonel, Medical Corps, U. S. Army, formerly a member of the Austin State Hospital Staff, is being held a prisoner of the Japanese, presumably in the Philippines.

Dr. Carl Gerady Seagraves, has reported for duty in the Medical Corps, U. S. Army at Carlisle Barracks, Pennsylvania.

Dr. J. N. Thomas, a practicing physician at Mansfield for fifty-four years, was recently honored by the presentation of a certificate of honor from the Business Women's Club of Mansfield in recognition of the unselfish service rendered that community.

Dr. Edwin G. Faber, Tyler, has been re-elected Director-at-large of the National Tuberculosis Association for a two-year term.

Dr. J. W. Thompson, U. S. Public Health Service, formerly stationed at Detroit, Michigan, has assumed duties as Director, Houston Venereal Disease Clinic and detention ward, replacing Dr. D. E. Bennison, transferred to the National Institute of Health.

Dr. Leslie L. Lumsden, formerly of New Orleans, who retired in 1939 from the U. S. Public Health Service, has been appointed a member of the faculty, University of Texas School of Medicine as a lecturer in epidemiology, Department of Preventive Medicine and Public Health.

Dr. W. R. Ross, formerly Director of Upshur County Health Unit, has been appointed Director, Nolan County Health Unit, succeeding Dr. Francis E. Dill, Major, U. S. Public Health Service. Dr. Dill has assumed his duties as Director, Paris-Lamar County Health Unit.

Dr. J. M. Coleman, Austin, has been appointed a member of the National Advisory Committee on Maternal and Child Health services for the Children's Bureau, U. S. Department of Labor.

Dr. E. M. Longoria, Laredo, has been appointed City Health Officer, filling the vacancy created by the resignation of Dr. Albert T. Cook, who has served in that capacity for eight years.

Deaths

Dr. Francis E. Gibbons, Presidio, aged 72, died recently of uremia.

Continued on page 62

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GASTRON is an original extract of the organic and inorganic constituents of the entire mucosa of the hog-stomach, including the pylorus. The acidified and aromatized extract is incorporated in an aqueous-glycerin-propylene glycol menstruum which preserves the enzymatic activity. The preparation contains no alcohol. It is accurately standardized by assay.

GASTRON is indicated as replacement therapy in atrophic gastritis, and as an aid in the treatment of chronic gastritis. It is of value as adjunctive treatment in the anemias, and in certain gastric deficiencies associated with convalescence and old age. It is worthy of trial in the nausea and vomiting of pregnancy.

GASTRON with IRON is available also for prescription use.

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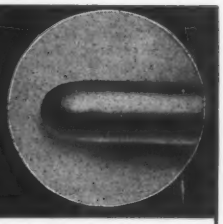

FOR safety and reliability use composite Radon seeds in your cases requiring interstitial radiation. The Composite Radon Seed is the only type of metal Radon Seed having smooth, round, non-cutting ends. In this type of seed, illustrated here highly magnified, Radon is under gas-tight, leak-proof seal. Composite Platinum (or Gold) Radon Seeds and loading-slot instruments for their implantation are available to you exclusively through us. Inquire and order by mail, or preferably by telegraph, reversing charges.

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Continued from page 60

Dr. William A. Hutchinson, Lieutenant Colonel, Medical Corps, U. S. Army, Texarkana, was killed February 23 in an airplane crash in the Middle Eastern Area of North Africa.

Dr. Edgar M. Hughes, Truscott, aged 74, died recently of cerebral arteriosclerosis.

Dr. Robert Ray Lee, Sipe Springs, aged 49, died recently of tuberculosis.

Dr. Walter Allan Minsch, Kerrville, aged 44, died recently of tuberculous empyema and diabetes.

Dr. William Jefferson McGowan, Paducah, aged 69, died recently of nephritis and arteriosclerosis.

Dr. James Benjamin Franklin McMillan, Edinburg, aged 85, died recently of carcinoma of the face and throat.

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Dr. Charles Lee McCann, Dallas, aged 83, died recently of arteriosclerotic heart disease and bronchopneumonia.

Dr. Edwin Jarrett Nevill, Houston, aged 93, died recently of heart disease.

Dr. Franklin Pierce Stevenson, Houston, aged 73, died recently of cerebral hemorrhage and bronchopneumonia.

Dr. Campbell Sansing, Blossom, aged 70, died recently.

VIRGINIA

American Association of Obstetricians, Gynecologists and Abdominal Surgeons will hold its annual meeting at Hot Springs, September 9-11. Dr. James R. Bloss, Huntington, is Secretary.

Alexandria Medical Society has elected Dr. S. H. Williams, President; Dr. C. E. Arnette, Vice-President; and Dr. Alfred Abramson, Treasurer, all of Alexandria.

Tazewell County Medical Society has elected Dr. J. W. Whitten, North Tazewell, President; Dr. W. C. Jackson, Amonate, Vice-President; and Dr. J. A. Robinson, Richlands, Secretary-Treasurer.

Dr. Miriam Clarke has replaced Dr. L. D. Abbott as Assistant Professor of Biochemistry, Medical College of Virginia, Richmond.

Dr. Hawes Campbell, Jr., has located in Staunton where he is connected with the staff of the Western State Hospital.

Dr. S. H. Macht, formerly of Crewe, is taking special training in x-ray at the Jefferson Hospital, Philadelphia, Pennsylvania.

Dr. William Bickers, Richmond, recently spent a month investigating research problems in the field of gynecologic endocrinology at the Elizabeth Steel Magee Hospital, University of Pittsburgh.

Dr. Leslie M. Bell, Winchester, has been certified as a Diplomate of the American Board of Surgery.

Dr. Clifton R. Titus has moved from Bassett to Bedford.

Dr. George C. Snead has moved from Covington to Derby.

Dr. William H. Higgins and Dr. Herbert T. Wagner, Richmond, have been elected members of the Board of Directors, Richmond Rotary Club.

Dr. T. Dewey Davis, Richmond, has been elected President, Richmond Tuberculosis Association, to fill the unexpired term of Dr. Fred W. Scott, resigned.

Dr. Walter T. Graham, Richmond, has been reappointed a member of the State Board of Health. He has been a member for thirty years and is now President.

Dr. Alfred Chambers Ray, Ashland, has been appointed the first full-term resident of the Richmond City Home.

Dr. Raymond A. Vonderlehr, a native of Richmond, who has just completed eight years as Assistant Surgeon in charge of the Division of Venereal Disease, Washington, has been appointed Director of District No. 6, U. S. Public Health Service, covering Puerto Rico and the Virgin Islands.

Dr. E. G. Gill, Roanoke, was installed President of Lions International at its recent annual meeting held in Cleveland, Ohio.

Dr. Alexander Spottswood Robins, Richmond, and Miss Sarah Emma Hutcherson, Reidsville, North Carolina, were married July 28.

Continued on page 64

Quick, dependable results!

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DUBIN AMINOPHYLLIN
THEOPHYLLINE-ETHYLENEDIAMINE

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Discriminating physicians are prescribing this product, American Made from American Materials, as a:

MYOCARDIAL STIMULANT AND POWERFUL DIURETIC: EFFECTIVE IN BRONCHIAL ASTHMA, PAROXYSMAL DYSPNEA AND CHEYNE-STOKES RESPIRATION.

Numerous reports in the literature comment on Prompt Relief, Favorable Action, and Dramatic Improvement in these conditions.

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THE REMAINING FIFTEEN THOUSAND

Pellagra deaths decreased, according to the United States Public Health Service chart, from 224 per hundred thousand of population—30,000,000—in the thirteen Southern States in 1928 to 51 deaths per hundred thousand in 1940. These 15,000 preventable deaths from pellagra still go on each year.

Wholesalers, retailers and suppliers must give public health officials and the neighborhood physicians who have done and do the medical job, the utmost of cooperation in ending these preventable deaths.

WHAT DRIED BREWERS' YEAST HAS DONE

The death rate has decreased both from relief and prevention. Dried brewers' yeast is outstanding.

The Vitamin Food Company's Dried Brewers' Yeasts, Green Label, with the hop flavor, and Red Label, debittered, have been and are available through most wholesalers and retailers throughout the thirteen Southern States; through many Health Departments and some Red Cross Agencies.

FROM A COUNTY HEALTH OFFICER

Since our start in 1927, among many letters received from physicians is a typical one from the Medical Director of a County Public Health Service, saying:

> "* * * at least seventy-five per cent of the patients that have taken this product (Vitamin Food Company's Dried Brewers' Yeast) over the course of two or three months have been cured and the other twenty-five per cent have been arrested, where it was taken at any length of time."
>
> "* * * Nearly fifty per cent of our insane cases, previous to the use of yeast, in our health work here, were suffering from pellagra. * * * During the past year the number of insane cases from this cause has been practically nil."

A medical expert in pellagra, in the Southern Medical Journal, November 1942, after giving nicotinic acid, an essential and important part of the pellagra preventive factor or factors due credit, says:

> "The widespread use of brewers' yeast, the promotion of gardening, the introduction of nicotinic acid, and the educational work related to these projects, have been largely responsible for this reduction. Brewers' yeast has and will continue to play an important role in this program."
>
> "None of them has played a more important role than brewers' yeast."

ENOUGH GARDENS, MILK COWS AND WHOLE GRAINS NEEDED

Enough gardens, milk, eggs, lean meat and whole grains must be had both for the prevention of pellagra and to supply enough of all the vitamins in the daily diet.

SIMPLE, QUICK USE

The simplest way to use dried brewers' yeast is to stir two teaspoonfuls in a glass of cold water or cold milk.

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Our **ALCOHOLIC** treatment destroys the craving, restores the appetite and sleep, and rebuilds the physical and nervous condition of the patient. Liquors withdrawn gradually; no limit on the amount necessary to prevent or relieve delirium.

MENTAL patients have every comfort that their home affords.

The **DRUG** treatment is one of gradual Reduction. It relieves the constipation, restores the appetite and sleep; withdrawal pains are absent. No Hyoscine or rapid withdrawal methods used unless patient desires same.

NERVOUS patients are accepted by us for observation and diagnosis as well as treatment.

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HOSPITAL FOR SALE—Unusual opportunity for doctor who can do general surgery. Established eleven years. Good agricultural section of South, not affected by defense jobs or other mushroom booms. Owner in bad health is reason for selling. Consider payments. Welcome fullest investigation. W. W. Diamond, M.D., Magee, Miss.

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Continued from page 62

Dr. Maurice Sidney Vitsky and Miss Betty Jane Wallerstein, both of Richmond, were married recently.

Dr. Donald Walters, Charlottesville, and Miss Babette R. Rothschild were married recently.

Deaths

Dr. Cyrus Haymond Maxwell, Morgantown, aged 80, died recently.

Dr. Robert Linn Osborn, Clarksburg, aged 66, died recently.

Dr. Willard Bellamy Robinson, Richmond, aged 81, died July 4.

Dr. William Reese Williams, Richlands, aged 70, died July 17.

WEST VIRGINIA

Ohio County Medical Society has elected Dr. Arley V. McCoy, Elm Grove, President; Dr. D. E. Greenletch, Wheeling, Vice-President; Dr. Robert W. W. Phillips, Wheeling, Secretary; and Dr. James C. Hazlett, Wheeling, Treasurer.

Dr. John E. Offner, Superintendent of the Western State Hospital for the Insane, Weston, has been appointed State Health Commissioner for the term ending May 31, 1947, succeeding Dr. Clifton F. McClintic, Charleston, who has held the office since March, 1941, but whose term had expired.

Dr. William C. D. McCuskey, Wheeling, member of the Public Health Council, has been appointed a member of the State Board of Examiners for Nurses for the term ending June 30, 1944, succeeding Dr. Henry R. Glass, Charleston, who resigned November 1, 1942.

Dr. C. H. Engelfried, Montgomery, formerly a surgeon on the staff of Laird Memorial Hospital, is now located in the Professional Building, Charleston.

Dr. Erlond H. Hedrick and Miss Myrtle Adele Wade, both of Beckley, were married recently.

Dr. Harry H. Bolton, Jr., Thomas, who has been engaged in Coal Mine Practice for twenty-three years, has retired and moved to Hilliard, Florida. He is succeeded by Dr. H. S. Parker, McMechen.

Dr. L. A. Moser, Minden, has opened offices with Dr. A. C. Litton in the Day and Night Building, Charleston.

Dr. Joan Goebel, Parkersburgh, has been appointed Chief Anesthetist, Deaconess Hospital, Evansville, Indiana.

Dr. Roy R. Summers, Morgantown, who has served as head of the West Virginia University health center for several years, has resigned. He will locate at Charleston after completing a postgraduate course in surgery.

Dr. Martin B. Woodward, Columbia, South Carolina, has been named Director, Bureau of Vital Statistics, succeeding Dr. Franklin H. Reeder, who is in military service.

Deaths

Dr. Thomas Dickinson Burgess, Williamson, aged 74, died recently.

Dr. Adam McClintic Byrd, Bluefield, aged 75, died July 4.

Dr. Harriet B. Jones, Glen Dale, aged 87, died recently.

Dr. William H. McCauley, Sutton, aged 84, died recently.

Dr. Earl Welborn Owen, Spencer, aged 45, died recently.

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Prompt Service
RADIUM AND DEEP X-RAY THERAPY
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CENTRAL X-RAY AND CLINICAL LABORATORY
Fred F. Schwartz, M.D., Director,
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now measures 4 (instead of 6) level tablespoonfuls to the ounce

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* **is packed 16 oz. (instead of 12) per tin**

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* **each ounce supplies 2.8 mg. iron**

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During the baby's first six months, this product alone supplies to the milk formula more iron than the infant requires

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ALL AT NO INCREASED COST TO THE PATIENT

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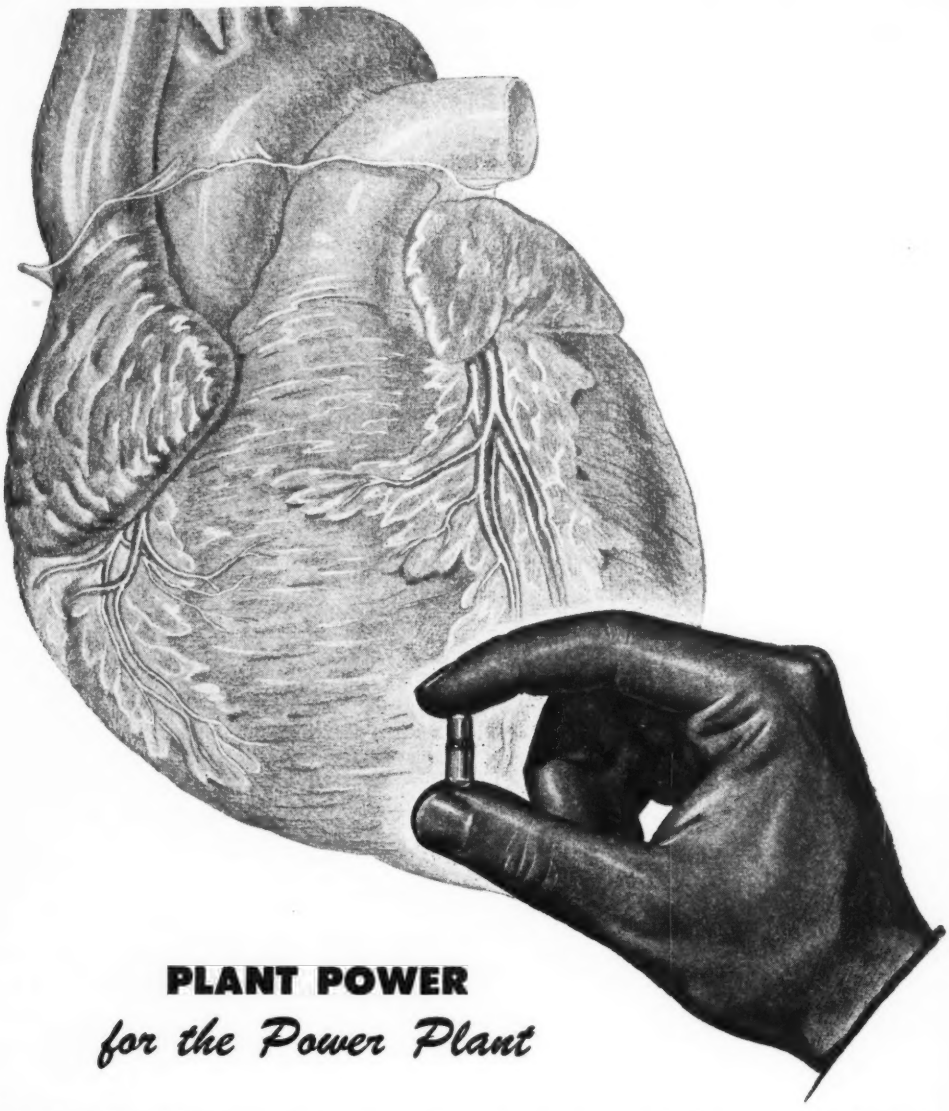

PLANT POWER

for the Power Plant

FROM seedling to harvest and on through processing and standardization contents of each DIGIFORTIS* Kapseal* are handled meticulously. Careful supervision results in a medicament of highest therapeutic value, fat-free, containing ALL cardioactive principles of Digitalis leaf.

Air is excluded by hermetically-sealed gelatin capsules to guard against deterioration—to maintain in DIGIFORTIS Kapseals the most stable form of Digitalis.

Original potency of DIGIFORTIS Kapseals has been continued by use of the International standard and lethal dose frog method of assay. Each Kapseal represents 1 International unit, equal to 1½ grains of International Standard Digitalis, or 1 cc. (15 minims) of Tincture of Digitalis, International standard.

DIGIFORTIS Kapseals are supplied in bottles of 100 and 500. Other Digifortis products include ampoules, tablets and liquid.

*Trade-marks Reg. U. S. Pat. Off.

PARKE, DAVIS & COMPANY
DETROIT, MICHIGAN

X-MEN